M16832

22101640872

131 C

81

LIBRARY OF THE BRITISH MEDICAL ASSOCIATION
PRESENTED BY
ERNEST HA T Esq

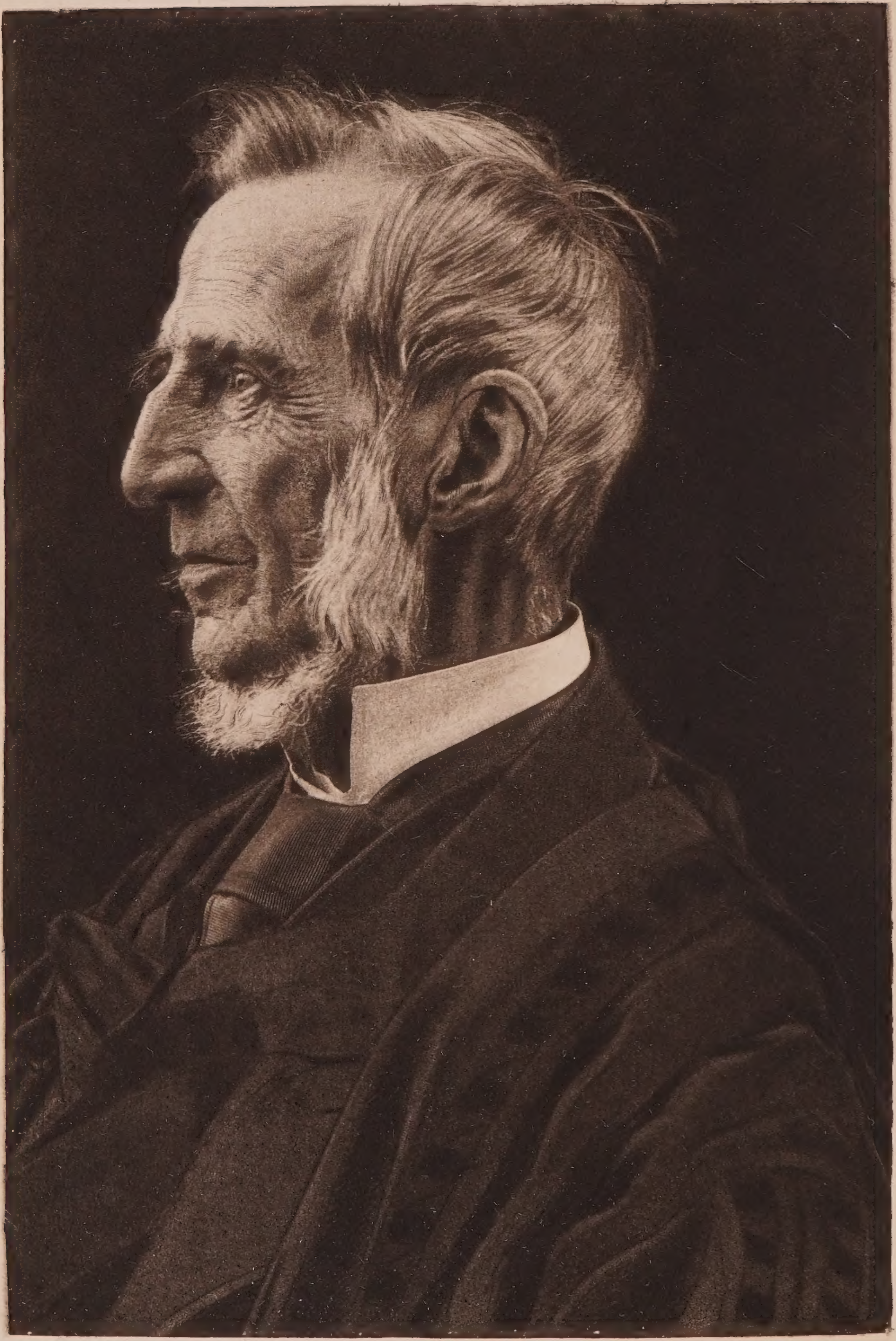
From the Publishers

LECTURES

BY THE LATE

SIR GEORGE E. PAGET, K.C.B., &c.

LIBRARY OF THE
PRESENTED BY
ERNEST HART Esq
BRITISH MEDICAL ASSOCIATION



LIBRARY OF THE
PRESENTED BY
ERNEST HART Esq
BRITISH MEDICAL ASSOCIATION

SOME LECTURES

BY THE LATE

SIR GEORGE E. PAGET, K.C.B., M.D., F.R.S.

REGIUS PROFESSOR OF PHYSIC IN THE UNIVERSITY
OF CAMBRIDGE

EDITED FROM MSS.

WITH A MEMOIR

BY

CHARLES E. PAGET

VICE-PRESIDENT OF THE N.W. BRANCH OF THE INCORPORATED SOCIETY OF
MEDICAL OFFICERS OF HEALTH
MEMBER OF COUNCIL OF THE EPIDEMIOLOGICAL SOCIETY OF LONDON
MEDICAL OFFICER OF HEALTH FOR THE COUNTY BOROUGH OF SALFORD

Cambridge
MACMILLAN AND BOWES
1893

-99172994

CAMBRIDGE
PRINTED BY JONATHAN PALMER
ALEXANDRA STREET

M16832

WELLCOME INSTITUTE
LIBRARY
Coll. welMOmec
Call
No. WB100
1893
P13s

LIBRARY OF THE
PRESENTED BY
ERNEST HART Esq
BRITISH MEDICAL ASSOCIATION

CONTENTS.

PAGE
Preface vii
Memoir 1
Ætiology of Typhoid Fever 29
Alcohol as a Cause of Disease, No. I. . . 53
" " " No. II. . . 93
Mental Causes of Bodily Disease . . . 137

LIBRARY OF THE
PRESENTED BY
ERNEST HART Esq
BRITISH MEDICAL ASSOCIATION

PREFACE.

It has been in no spirit of presumption that I have ventured on the task of editing any of the unpublished medical manuscripts of my Father. The terms of his Will, by which he left me all his medical manuscripts, were such as to leave me only the duty of determining what was the best use to which these might be put. A careful examination of them revealed the fact that there were but three so nearly completely written, that they admitted of being edited in lecture-form. The manner in which they were written indicated pretty clearly that they were used or intended to be used for lectures. But as it was far from certain that any of these papers had been written for publication, and filial predilection had necessarily to be laid aside, the responsibility of publishing them could not be a light one. The happy circumstance of being able to obtain the opinions of others more competent to judge, and on whose judgement I could confidently rely, has relieved me from my embarrassment. Supported by their opinions, the risk of publishing has been taken.

While the text of the several sheets of manuscripts has been carefully retained, it has been necessary, here and there, to connect mere notes and so make them form a part of the text. The same remark applies equally to the several illustrative cases referred to in the manuscripts. The manuscripts themselves were all admirably arranged, but additional notes and remarks had evidently been inserted among them from time to time; still, the places where these were to be used were most carefully indicated. Thus the lectures, so far as they are now published, may be considered to have been nearly completed.

But it is far from certain that they are finished lectures. In several particulars I am sure that they are not so complete as their author would have made them had he lived. They are wanting in some points which

I am confident, from frequent verbal and written intercourse, it was intended should be dealt with. But it has not been possible to supply these deficiencies, even after careful and repeated search among all the medical manuscripts which were left.

It would, at any rate, seem as if the lecture on "Mental Causes of Bodily Diseases" had not been completed, for there are some notes, though of the briefest kind, indicative of an intention to discuss the values of various remedial measures. There appears to have been an intention to consider the question how, if some mental conditions may cause disease, other mental conditions may aid in the cure of disease. And it is obvious that a consideration of such matters—the headings of some of which were written down, as Hypnotic Suggestion, Faith-healing, and the recently-advanced curative influence of Music,—would have disclosed keen and sound judgement in regard to them, and would have added much to the value of a lecture already distinguished for clearness of treatment and precision in language.

Of course, these few lectures lack in print the emphasis of the lecturer, which those who heard him in that capacity were familiar with. Nevertheless, the clearness and sound judgement which they exhibit seem to warrant their publication as a Memorial of him who wrote them.

North Bentcliffe, Eccles,
January, 1893.

MEMOIR.

MEMOIR.

Sir George Edward Paget, K.C.B., was born on December 22nd, 1809, at Great Yarmouth, Norfolk. He was the seventh son of Samuel Paget, Esq., by his wife Sarah Elizabeth, eldest daughter of Thomas Tolver, Esq.

Of his early childhood years there are no records, except such as he himself told of; but the period, during which some of them were spent, was deeply imprinted on his memory. That period was remarkable for the most intense national anxiety as to the progress of events in Europe,—that in which the mere mention of the name of Napoleon scarcely ever failed in this country to arouse the bitterest feelings. He vividly remembered, to the last year of his life, having seen the stage-coach coming along the

Gorleston Road into Yarmouth with flags flying, and the guard shouting out the news of the battle of Waterloo; and he was wont to speak with deep feeling of his father having, some years before, raised a volunteer corps in anticipation of the threatened invasion of England by the French.

By the divine laws of Nature, the hereditary transmission of virtues from the parent to the offspring is not necessarily restricted to the male element, and it is certain that, numerous as were the patriotic and other good qualities of Mr. Samuel Paget, his wife in no less degree inspired and fostered qualities of heart and mind in her children which they ever gratefully and reverently recognised. Their son, George Edward, certainly bore witness to the good qualities of heart and mind in both. He always spoke of his mother as one of the most accomplished women he ever knew, and of both his parents as persons of a remarkable energy and mental ability.

He received his early boyhood education at a day-school in the town; but in 1824, when not yet fifteen years of age, he entered, under Dr. Russell, the Charterhouse School, then the largest of the English public schools. His elder brothers, Frederick and Arthur Coyte, had previously entered on their education in the same school in the years 1819 and 1822 respectively. None of the brothers looked back with much satisfaction to the teaching in the school of those days, and the subject of this memoir used often to relate a circumstance which showed how at that time a classical education was deemed all that was necessary for the training of the youthful mind. One of his school-fellows was the son of a London banker, and this lad, during one of the vacations, had somewhat horrified and amazed his father by his inability to do a compound addition sum. The worthy banker accordingly waited upon Dr. Russell, and gave him his opinion on the advantages his school offered towards a liberal education! The classics were at that time the only subjects studied at the school. It so happened that George Paget had found pleasure in privately studying elementary mathematics, and so it came about that when Dr. Russell, in deference to the strong remonstrance of the influential banker, decided to introduce the teaching of mathematics into the school, he found himself at a considerable advantage over his fellows. Dr. Russell engaged one gentleman to teach arithmetic and mathematics to some four hundred boys. This gentleman commenced operations by setting an examination-paper for the whole school, and George Paget, having read the first book of Euclid, came out at the top of the list. His position in the school at the time was sixteenth; this was in the summer quarter of 1827, the last which he spent at the Charterhouse. Among his school-fellows were Edmund Law and Henry Lushington, George and Richard Venables, and William Makepeace Thackeray. The place which he occupied in the school, however, shows that he must have made very considerable progress in his classical studies; and that these studies left their influence on his mind was evidenced, in his later years, by the readiness with which he could join in discussions on classical subjects.

On leaving the Charterhouse he entered Gonville and Caius College at Cambridge in October, 1827, when not quite eighteen years of age. His brother Arthur Coyte had preceded him there.

Of his first two years at College there is no particular record, except that he worked moderately and rowed well. But, in his third year, he determined to take a higher degree in mathematics than was predicted to be possible for him, and he therefore set himself to avoid all distractions from his prescribed labours. His reward was not a small one. When the Mathematical Honour List for 1831 was published, he was found placed as eighth Wrangler, in company (among the first ten Wranglers) with such men as Dr. Budd and Baron Amphlett, and with others, whom he beat, as Dean Blakesley and Bishop Selwyn.

The following year he was elected a Fellow of his College. The terms of the fellowship, to which he was elected, were that the holder of it should be a Norfolk man and a member of the medical profession; in compliance therefore with the then statutes of the College, he entered on the study of Medicine. This was commenced in his University under Dr. Haviland, Regius Professor of Physic, Dr. Clark, Professor of Anatomy, and Dr. Cumming, Professor of Chemistry. It was subsequently continued in Paris, and at St. Bartholomew's Hospital in London. He took the degree of Bachelor of Medicine in the University of Cambridge in 1833, and of Doctor of Medicine in 1838. In the following year he was elected Physician to Addenbrooke's Hospital in Cambridge, and also became a Fellow of the Royal College of Physicians of London. This record is one that bears the stamp of personal energy, hearty adoption of his profession, the esteem of his fellows, and an upright and genuine regard for the terms on which he held his fellowship at Caius College.

But on his return to Cambridge he had physical difficulties to contend with. For many years ill-health—attacks of rheumatic fever—repeatedly interrupted both his studies and his professional pursuits. They did not, however, prevent his taking a large part in the business of his College and of the University. Of the former he was Bursar for some years until 1851, when he vacated his fellowship on his marriage. In the latter he exerted himself to the utmost—high wrangler though he had been—to urge the advisability of making the study of Natural Science a part of the University course, and of encouraging it with a share of the rewards which had been bestowed exclusively on the mathematical sciences and classics. He succeeded first in his own College, where the earliest steps in this direction were taken. When at length, in 1851, the University established a Natural Science

Tripos, he was for several years (1852, '53, '55, '61) appointed to take part in the examinations. In July of 1851, too, he was elected Linacre Lecturer in Medicine at St. John's College, Cambridge, and continued to hold the post (being re-elected every four years) till he vacated it on being appointed Regius Professor of Physic in the University.

Until the end of the year 1851 he resided in his College; but on his marriage, at this time, he took a house in the town, and pursued his profession even more vigorously than before as a consulting physician. He married on December 11th 1851, Clara, the youngest daughter of the late Rev. Thomas Fardell, LL.D. Cantab., Vicar of Sutton in the Isle of Ely, and had a family of ten children, three of whom died young, while the remainder, with his wife, survived him. He was restored in large measure to his collegiate life, when in 1881, thirty years after his obligatory retirement from it, his old College elected him to a Professorial Fellowship under the New University Statutes. This was one of the great pleasures of his remaining years.

But his removal from active participation in the affairs of his College, in 1851, did not prevent him from playing a considerable part in the society of learning, or in the affairs of the University. During the years 1855—56 he held the office of President of the Cambridge Philosophical Society; and in 1856 he was also elected a member of the first Council of the Senate under the Universities Act.

In 1863 he was appointed to represent his University on the General Council of Medical Education and Registration of the United Kingdom, and it was in this capacity that he showed exceptional business qualifications. In 1869 he was elected President of the Council in succession to Sir George Burrows, also a former fellow of Caius College. On the expiration of the usual period of office, in 1874, he was unanimously re-elected president; but soon after he resigned, and was succeeded by Dr. (now Sir H.) Acland.

In 1872 he was appointed by the Crown to the Regius Professorship of Physic in the University of Cambridge.

Such was the distinguished manner in which, having adopted medicine as a profession, he pursued his calling, and, in so doing, won credit and fame for his College and his University.

He did as much, however, for the profession outside his University. His statesmanlike qualities have left their mark on the medical training of the present day, and his whole life may be said to have raised the status of the great body of his professional brethren. But it is impossible, in reviewing what he thus did, to overlook the fact of its association with what he was striving to accomplish within his University. Thus, what he aimed to effect for the medical profession outside the University cannot well be separated from what he endeavoured to do within it. Indeed, one of his most notable achievements was the introduction of clinical examinations for medical degrees at Cambridge in the year 1842.

In 1864 he was elected President of the British Medical Association, and at its meeting in Cambridge delivered an Address, the principal subjects of which were what the University had done, and had not done, for the medical and natural sciences, and the utility of the latter as part of a liberal education. But it did not end here. He appealed to his medical brethren to aim at maintaining a high standard of scientific attainments, and laid it down as an axiom that, "Every ignorant man admitted into our profession has an injurious influence on the estimation in which the entire body is held. His demerits have a tendency to lower us throughout the circle in which he is known. The want of confidence in him—the want of respect for him—begets distrust and disrespect for the profession in general." Then he continued, "Contrast with this the influence on our social status of such men as Mead, Freind, and Arbuthnot, Thomas Young, Abercrombie, and Brodie, and of the many others, whose acquirements or achievements in literature or science have raised them to eminence in the eyes of the world. Have they not elevated in some degree the whole body medical; nay, are there not some of our own associates—are there not some here present—who have made us all their debtors by the lustre they have thus reflected on our common calling?" And again, in respect of the profession of medicine itself, he fixed with unerring clearness the standard by which he believed it must be known in the future, and gave voice to the hopes which he fondly cherished. "We do injustice to medicine if we treat it as a mystery. It is a science, and entitled to rank as such; and we at least should be ready to show that its maxims are founded in truth and reason. Let us hope that the educational changes now in progress will aid us in maintaining the dignity which is its due;—that, when people are better instructed as to the sciences on which medicine rests, when they themselves have examined into some parts of its broad and firm foundations, they will have a juster appreciation of medicine itself. Let us hope that medicine will then receive the respect that is due to it, as the only one of the learned professions which holds its doctrines open to all inquiries, and never condescends to uphold itself on any dogma either of authority or tradition. Let us hope—as we have a right to hope—that medicine will then be honoured as the profession in which all discoveries and inventions are offered freely for the benefit of mankind, and in which their concealment for selfish purposes, or their appropriation by patent right, is held to be disgraceful."

In 1866 he was chosen to deliver the Harveian Oration at the Royal College of Physicians of London. It was a model of scholarly thought and style. The subject was Harvey's exhortation, "To study and search out the secrets of nature by way of experiment." In one part of the oration he presaged the brilliant discoveries made by Pasteur in recent years. "Is there nothing more that we may learn from Jenner's discovery?

Is there nothing it may suggest? The protective power of vaccination appears at present as an isolated fact. An isolated fact in Science. But is it an isolated fact in *Nature*? Is it probable that there is but a single instance in Nature of one disease so modifying a man's constitution, as to render him less liable to another disease? Or —to extend the question—is there no manageable agency, derivable from animal life or any other source, by which such a modification might be effected? How are we to explain the familiar fact that some individuals escape a fever, when others, perhaps less exposed, catch the infection? A *greater liability* may be attributable to a low, ill-defined condition of the general health:

> "'Some low fever ranging round to spy
> The weakness of a people or a house,
> Like flies that haunt a wound, or deer, or men,
> Or almost all that is, hurting the hurt.'

"But the *immunity* from such attacks is plainly not due in all cases to superior health or robustness of constitution. Instances are familiar of one or two escaping when an infectious fever runs through a family, and those who escape the infection are by no means always the strongest. The baby often escapes while older children are attacked. Persons above forty years of years are less liable to typhoid fever than those who are younger; yet not from greater strength of constitution; for, if attacked, they are more likely to succumb.

"Is not the immunity in such cases due to some protecting cause, which we do not discern? And, if it be, is the cause one which we could put into operation, as we use vaccination for the prevention of small-pox? Do not some of these familiar facts seem as if they were pregnant with secrets, which lie before us, as Jenner's lay before him, ready to be disclosed to clear, impartial eyes?"

It is much to be regretted that he published so little in his lifetime; but the conditions of his professional practice were such as to leave him but little time for thoughtful writing. The calls for his services meant, in a very great measure, long country journeys by road or rail, many of them at night, and in all weathers. Never of a very robust physique, the bodily fatigues which he underwent after middle life left him, day after day, with but little strength in which to write much. What strength was left him for this purpose he devoted nearly entirely to his case-books. These were models of excellence, and there is much evidence of their having been largely used for reference in his "Notes for Lectures." His laborious professional life did not begin to end before the close of the year 1885, and he had then been lecturing as Regius Professor for thirteen years. The period of greater ease when much might have been written was also, alas, the period of old age, when mental exertion came to be more and more tiring, and when a close sedentary life was to be avoided. Still, even in this period, something was done, for two papers on cases of much interest were published by him in the *British Medical Journal* during the years 1887 and 1889.

No memoir of him can, however, be fairly complete without some reference to the only too few records published in his life-time. Few as they were, one at least of them gives him claim to be the first, or one of the first, describers of some peculiar symptoms of disease of the nervous system, and all give him title to the distinction of having been one of the most careful and truthful observers in Clinical Medicine. His sound sense and powers of accurate judgement gave his words added value, and it certainly cannot be said of him that what he noted was moulded to support his opinions. On the contrary, the bases of his opinions were fact and reason. The apparent similarity of things did not often deceive him, for he was quick to note differences in them, and eager to discern the exactness of their variation and measure their importance.

His first publication was an Article entitled "Cases of Morbid Rhythmical Movements, with Observations," which appeared in the sixty-seventh volume of the *Edinburgh Medical and*

Surgical Journal in the year 1847. These cases are referred to by Dr. S. Wilks in his work, "Lectures on Diseases of the Nervous System" (1883). This Article comprised a careful description of seven cases of, respectively, "Involuntary Bowing Movements," "Rotatory Movement of the Head," "Vibration of a Single Limb," and of "Various Rhythmical Movements." The descriptions of all these cases were particularly clear and carefully arranged, and the Observations on them gave evidence of sound critical judgement and also a wide knowledge of classical as well as current literature on symptoms apparently similar or analogous to those evidenced in his cases. In the commencement of the Observations on his cases, he said: "It is scarcely necessary to point out the difference between the cases and ordinary chorea. Choreal movements are indefinite and irregular; the movements I have been describing were as definite and regular as if they had been strictly voluntary. There is another ground of distinction. The choreal patient has the power of restraining his convulsions for a few moments by an energetic exercise of his will. The patients whose cases have been related possessed no such power;—indeed, in the fourth case, the morbid movement was manifestly aggravated by every endeavour to restrain it.

"With respect to the character of the rhythmical or recurring movements, it may be observed that they were either of one unvarying kind or of several kinds. When of one kind only, they were in some cases incessant; in others, paroxysmal. When of more kinds than one, there were instances of a single predominant movement interrupted at intervals by short paroxysms of a different kind.

"Thus do these movements in the manner of their occurrence resemble chorea in some cases, and epilepsy in others; while in a third class we see these two dissimilar characters associated in one and the same disorder."

Few as were his other published Observations, they mostly related to obscure nervous symptoms, and all were good illustrations of his methods of examination. Thus, his first paper in 1847 was followed by a communication to the *Medical Times and Gazette* of February 24th, 1855, of a "Case of Involuntary Tendency to Fall Precipitately Forwards"; to the *British Medical Journal* of September 22nd, 1860, of a "Case of Epilepsy, with some Uncommon Symptoms" (automatic laughter); a "Lecture on Gastric Epilepsy" in the *Lancet* of April 11th and 18th, 1868; a "Case of Remarkable Risings and Fallings of the Bodily Temperature" (*Lancet*, July 4th, 1885); "Notes on an Exceptional Case of Aphasia" (*British Medical Journal*, December 10th, 1887); and "Remarks on a Case of Alternate Partial Anaesthesia" (*British Medical Journal*, January 5th, 1889).

But besides these short though thoughtful papers, he wrote a "Notice of an Unpublished MS. of Harvey," in 1850; "Remarkable Abnormities in the Voluntary Muscles," published in the 'Cambridge Philosophical Transactions' for

1858; a pamphlet "On the Proposal to Introduce a New Grain Weight," the design of which was to show the inconvenience that would result from the use of the new grain in Apothecaries weight, which had been proposed by the Committee of the new British Pharmacopeia, in 1862; and lastly, the "Harveian Oration" in 1866.

He was the happy recipient of numerous academical honours, such as the Honorary Degrees of M.D. of Trinity College, Dublin, in 1867; of D.C.L. of Durham University in 1870, and of Oxford University in 1872; of LL.D. of the Edinburgh University in 1871; and of the Fellowship of the Royal College of Physicians in Ireland in 1887. He was elected a Fellow of the Royal Society of London in 1873.

On his retirement in 1884 from the position of Physician to Addenbrooke's Hospital, after a service of forty-five years, a bust of him was subscribed for by his friends, and placed in the entrance hall of that Institution; a replica of it was afterwards placed in the Council-room of the General Medical Council in London.

Of the other notable honours which he lived to enjoy, the first was the distinction of Knight Commander of the Bath (Civil Division), which the Queen was pleased to confer upon him, and the announcement of this appeared on Dec. 19th, 1885. It was an unexpected and unlooked-for honour, and it came late in life. But he was spared for just over six years to enjoy the pleasure which it gave to those about him, and to be thankful for the honour which through him was done to the Medical School of his University, which he himself had done so much to foster. The second was the invitation he received about two years later to allow his name to be proposed for the Parliamentary representation of his University, in the room of the late Mr. Beresford-Hope. He greatly desired to avoid the fatigues inseparable from the position, which at his time of life would have been burdensome. But he did not absolutely refuse; he had been too zealous a worker to disoblige the political party in the University to which he belonged, if it could be prevented. He, however, helped to seek for some other suitable candidate, and finally had the pleasure of seconding the nomination of Prof. (now Sir) George Gabriel Stokes, who was elected without opposition.

Doubtless, if he had been elected M.P. for his University his days would have been shortened—he himself certainly had that opinion,—and he would probably have felt it necessary to resign either this position or his professorship. At his age it would have been difficult for him to attend zealously to the duties of both, and undoubtedly he would have preferred to retain his work as Professor.

To those who knew him, perhaps some of the chief characteristics of Sir George Paget's life were his singular uprightness, and his strong sense of honour and justice. He was, besides, exceptionally sympathetic and very generous, and capable of detecting good even in those who were generally regarded as worthless. He was, consequently, invariably kind and considerate. He was social by nature, an admirable story-teller, and keenly humorous. His memory was particularly good, even over a very wide range of subjects, and rarely failed him. His business capacities were very marked during the whole of his life, not excepting that period of it when he was most harassed by the duties of his provincial practice, and the necessity of presiding over the meetings of the General Medical Council in London. His papers were always kept carefully arranged, and all his habits were orderly.

Such, in bare outline, is the record of a life of singular purity, devotion to duty, and unselfishness in private life. The inevitable end came, but happily not preceded by a period of long and wearisome suffering. A fortnight before he died he was dining out, and he was then in good health and spirits. On the night of January 16th 1892, however, he was cold and feverish; by noon the next day he had some cough, his temperature had risen two degrees, and he was feeling somewhat depressed. It was discovered that he was suffering from an attack of epidemic influenza, and he took to his bed. His illness only lasted thirteen days, and was borne from the first with calmness and fortitude. He fell quietly asleep in the evening of the 29th. "The beloved physician," as Canon Browne of St. Paul's, preaching in the University pulpit two days later and referring to him, said, "to whom the University owes in no small part one of the greatest modern developments of its many-sided duty to the nation; to whom so many of us have owed blessed relief of mind and body at times of darkness and danger and distress; to whom some of us have owed it, under God, and that not once only or twice, that we still are here to do such work as there may yet be for us to do," passed away in the fulness of his years.

His body was borne into the Chapel of the College which he loved, and there, in the presence of those among and with whom he had worked, the first portion of the last Service of the Church was performed. As he lived, so he died; full of thankfulness for all the mercies he had received, full of trust that he had done his best—that he had been, in his own last words, "faithful unto death."

LECTURE I.

ÆTIOLOGY OF TYPHOID FEVER.

ÆTIOLOGY OF TYPHOID FEVER.

WHAT is certain as to the ætiology of Typhoid or Enteric Fever? It has been proved by large experience that it is ordinarily associated with filth, particularly with the filth of sewers and cesspools. Also, it has been proved that it spreads, in some way or other, from the sick to the healthy. On these points there is a general and well-founded agreement in England at least.

In England also there is a general agreement that the ordinary mode of infection is through the alvine evacuations of the patient; that these contain the infective poison, or that out of which it is readily produced; and also that one of the most frequent ways in which the infection is conveyed is through contamination of the drinking water by the contagium discharged in the stools of a fever-patient.

The idea that it might be thus conveyed was derived from Dr. Snow's investigations into the mode of dissemination of cholera, and since that time an amount of evidence has been accumulating as to be, in regard of Typhoid Fever, conclusive proof.

But now comes a great divergence of opinion. Some maintain that the disease spreads by infection alone, that no case ever occurs except through infection by some of the contagium thrown off by a previous case; the infective matter thrown off by a person labouring under Typhoid becoming, through the drinking water or other means, a cause of infection to a healthy person.

Other writers, while admitting that the way by infection is the *ordinary* mode of its propagation, maintain nevertheless that it is not the *only* mode. They maintain that the poison may be generated afresh; and that the conditions under which it may be thus generated afresh are those of the putrefactive changes in fæcal excreta, and more especially in the contents of sewers.

The advocates of this view maintain with some cogency, that Enteric Fever must have had an origin at some time or other, and may, therefore, arise again under like circumstances; and they state with truth that it has been observed to occur under circumstances in which no source whatever of infection could be discovered, first cases occurring in isolated country parsonages or farm-houses, or remote lone spots in Scotland and New Zealand. Such cases as these are most easily explained by supposing a fresh production of the Typhoid-poison. They are, at all events, facts which must not be ignored, though their evidence may be weakened by objections.

On the other hand, those who maintain that the disease spreads only by infection, contend that putrefying organic matters, as the contents of sewers, have a power of causing the disease only when previously mixed with the discharges from the bowels of a patient labouring under Typhoid Fever. They object to the cases of apparently spontaneous origin, that they may have been caused by infection, though the source of infection was not discovered; and that, as Enteric Fever is in some cases attended with only slight general illness, the infection may have been derived from a slight case, the nature of which had not been recognised or even suspected. As a matter of fact, some outbreaks, which had appeared spontaneous, have been found on close enquiry to admit of this explanation. And this we know to be true of some other diseases, Diptheria for instance, which may exist in so mild a form as to attract little or no attention, and yet be infectious.

Another objection to the supposition of the Typhoid-poison arising afresh out of the putrescence of ordinary fæcal matters is, that, if this alone were an adequate cause of it, we might expect it would be perpetually arising, and so Typhoid Fever never ceasing among the constant filth of many great cities. It is agreed that, if this hypothesis were correct, the disease would have prevailed extensively in London in 1858, when the Thames stank with sewage, that it ought to be never ceasing in Irish cabins with dunghills at their doors. According to Dr. Stokes it is far from being *constantly* present under these circumstances,[1] but only recurs in epidemics. More than this, instances have been carefully enquired into and recorded in which English villages, with bad drainage and fæcal accumulations and contaminated water supply, have been for long periods of years totally free from Typhoid Fever, until, all at once, the disease has set in and prevailed extensively and severely; and it has been found on investigation that a patient had arrived with Enteric Fever, and that the epidemic began soon after his arrival, and could be traced, more or less clearly, to infection derived from his alvine discharges.

---

[1] *Lectures on Fever*, by W. Stokes, M.D., F.R.S. (1874), p. 63.

It must be admitted that these are strong objections to the theory of a fresh production of the Typhoid poison out of the putrefaction of filth and fæcal sewage. The arguments against this theory appear to preponderate, and the other view is, I believe, the one more generally received in the present day.

But, it seems to me, there is no gainsaying the statement that Typhoid Fever must at some time or other have had a beginning, the poison, by which we agree that it spreads, must at some time have had an origin. And it seems to me that our way to decide the controversy should be by solving if we can the greater problem of what this poison is, what is its nature? What is the essential nature of the poison which causes Typhoid Fever, and which we believe to be contained in Typhoid stools, constituting the contagium or infective matter by which the disease of the sick person is spread to persons previously healthy?

The first questions we should try to answer are, (1) Is this contagium living? or (2), is it merely a product of organic chemistry—of organic origin indeed, but not organised or living?

It is obvious that the second of these views falls in most readily with the hypothesis of the poison occasionally arising *de novo*, as a product of putrefaction of fæcal sewage. It is easy to conceive, nay it is certain, that organic compounds of a poisonous nature may be generated in putrefying filth; and on the other hand, it is highly improbable that living organisms should be so generated. The researches of modern science have wholly discredited the theory of spontaneous generation. It is also quite conceivable that a poisonous organic compound, though devoid of life, might by mere chemical action cause most, or nearly all, the symptoms of Typhoid Fever. But if it were merely an organic chemical compound arising out of putrefying filth, one would expect it to be more frequently produced wherever filth was present, and it would be most prevalent, not in Autumn, but in the heat of Summer. There is also one other fact inconsistent with the supposition of the poison being a lifeless organic compound, viz. its own multiplication, either within the body of the patient or in cesspools or sewers. The histories of Typhoid Fever have shown again and again that a very minute quantity of the poison, whatever it be, may suffice to excite the disease in a healthy person; and these histories, besides the analogy of other infective fevers, are strong evidence that the quantity of poison actual or potential discharged in stools is manifold greater than that which had been taken into the system. This fact alone, not to mention other considerations, seems to me conclusive against the view of the poison being merely dead matter. Its self-multiplication is a living act. The contagium must be a living organism.

What then is the nature of this Organism? Well, this question seemed to have been answered by the researches of Dr. Klein, published in No. VI. of the new series of Reports by the Medical Officer of the Privy Council and Local Government Board. Dr. Klein on microscopical examination of Lieberkuhn's follicles and Peyer's glands, in fatal cases of Typhoid Fever, found in these glands, and in the mucuous membrane around them, innumerable multitudes of exceedingly minute bodies, which he regarded as micrococci, organised and living. He found multitudes of them even in the neighbouring lymphatics and blood-vessels. He found large quantities of them in the fæcal excreta of typhoid patients. He inferred that these micrococci are the essential poison of Typhoid Fever; that the spores, having been swallowed, find their way into the glandular follicles, and there develope and multiply, and that their presence and multiplication are the main cause of the symptoms and phenomena of the Fever.

Again, more recently, Professor Eberth of Zurich[1] has found, in Typhoid Fever, "a Bacillus in the lymphatic organs of the abdomen, viz. in the closed follicles of the intestine, in the mesenteric glands, and in the spleen. This organism appears to stand in definite relation to the duration of the disease. At the beginning of the disease and at its height, before the sloughing of the intestine has occurred, it is present most abundantly; but as the disease becomes prolonged it diminishes and disappears. In the cases investigated it was found in a half, being absent in the more advanced cases." Eberth had found no such Bacilli in cases of death from other diseases; none in Septic diseases, nor in phthisis with ulcerated bowels.

Klebs has discovered this same Bacillus in the mesenteric and intestinal glands in Typhoid Fever, and Koch and Friedlander have verified the discovery.[2] It has also been supported by the observations of Maragliano and Gaffkey.[1]

---

[1] *British Medical Journal*, Nov. 26, 1881, p. 877.

[2] *A Manual of Pathology*, by Joseph Coats, M.D., 1883, p. 256.

Now if we accept the conclusions of Klein, the essential poison of Typhoid Fever is a low form of fungus in the form of micrococcus. If we accept Professor Eberth's, it is a Bacillus. The two conclusions are not in agreement, and we know that such investigations are liable to many sources of error. The observations of Professor Eberth are the more recent, and, as far as they go, have been confirmed by other trustworthy authorities. They *may* have solved the question. But the proof is not yet complete. The life history of Eberth's Bacillus is not yet made out. The proof is incomplete until the Bacillus shall have been artificially cultivated, and shall have been, by successive cultivations, separated from all other Bacteria; and the disease Typhoid Fever, produced by inoculation with Bacilli of this pure cultivation.

Until this shall have been done, the Bacilli cannot be admitted *as proved* to be the essential cause of Typhoid Fever. Well, these direct observations being not yet conclusive, what other evidence have we?

---

[1] *Micro-organisms in their Relation to Disease*, by Julius Dreschfeld, M.D., F.R.C.P. (*British Medical Journal*, Dec. 1, 1883, p. 1057).

Experiments on animals, from which much might have been expected, have really taught us nothing. Eberth's Bacilli given to animals have not communicated Typhoid Fever to them. Nay, the stools of Typhoid Fever patients—which we have so many reasons for believing to contain the contagium—these stools given to animals have failed to give them Typhoid Fever. The matter of typhoid stools has been taken in their drink by pigs, dogs, cats, rabbits, guinea-pigs, white mice and monkeys, and in no case has the disease been communicated to any of these animals; though it is said that monkeys are liable to the disease, that it has occurred among the monkeys in the Zoological gardens of London after having predisposed them to it by purging with castor oil.

But though direct and complete proof be still wanting, it is plain that facts and reasons of a general kind give the very strongest support to the view that the Typhoid contagium is really a living organism.

(*a*) The general analogy of the phenomena of Typhoid Fever with those of other Fevers, in most of which there is reason to believe, and in two at least of which—the Splenic and Relapsing Fevers—it has been demonstrated beyond all question, that the essential poisons are micro-organisms.

(*b*) The analogy observed, ages ago, between the phenomena of Fevers and those of Fermentation and Putrefaction, the existing causes of which have, in our time, been proved to be germs.

(*c*) The period of Incubation.

(*d*) The definite duration of the Fever.

(*e*) The great multiplication of the Poison.

To these reasons may be added: its prevalence at one season of the year—the Autumn. In England, chiefly in October and November; in Australia chiefly in April and May. This preference for one season of the year looks very characteristic of a living organism and particularly of some vegetable growth.

Another point, which seems to indicate that the Typhoid poison is of the nature of a low organism, is in the evidence that it may lie dormant for a long time, and then again manifest activity. This dormant condition is improbable in a lifeless organic compound. Such a compound would probably in a much shorter time be decomposed, and so rendered inert. But it is quite conceivable that the spores of a fungus, of a Bacillus, may lie dormant for a time, and then spring into activity when circumstances become favourable for its growth. This is no more than we know to be continually happening with the seeds of higher plants; and we know that it may happen with the Bacillus anthracis. Or, instead of being dormant, it may have been multiplying itself, *out* of the body, if the external conditions be favourable to its multiplication. These facts and considerations taken together seem to me not only preponderant but decisive, that the essential cause of Typhoid is not some dead organic compound, but is a living microbe, some kind of minute fungus.

How then, if the cause be a living organism, and we reject the hypothesis of spontaneous generation, how can we account for those cases in which Typhoid Fever has appeared to arise *de novo,* without any assignable cause except filth and the autumnal season?

Well, some of them may be explained by the fact that the introduction of the poison by a Typhoid patient was only not discovered. Typhoid, like Diphtheria and Scarlet Fever, may be, though rarely, so mild, that the patient continues his employment and is not recognised as a fever-patient, and yet his evacuations may be infective. And in some cases, the fever germs may have lain dormant for months or years, but become active under circumstances favourable to their development. Or it is *conceivable* that they may have been brought from long distances through the air.

But still there remain many cases in which neither of these explanations is fairly applicable.[1]

I would suggest a mode of reconciling the contradictory views. I would suggest that the difficulty of accounting for these cases, as well as some other unexplained facts in the history of Typhoid, may be solved by supposing that the poison of Typhoid Fever may, under favouring circumstances, be developed in a micro-organism that was previously harmless or inert.

We all know the recent experiments of Pasteur, how by artificial cultivation of pathogenic micro-organisms, particularly those which constitute the contagion of Splenic Fever and Fowl cholera, by their cultivation under certain conditions, he has succeeded in reducing their virulence, and even rendered them harmless.

It appears to me not too bold an hypothesis to suppose Pasteur's process to be reversible.

Suppose it reversible, and we have a key for the solution of our difficulties in the ætiology of Typhoid. We have only to suppose the existence of a microbe, which is harmless so long as it grows on ordinary soil under ordinary cirumstances, but which may acquire virulence if growing and multiplying under certain unusual external conditions. This supposition will enable us to reconcile the apparently contradictory facts. It will explain how Typhoid Fever *may* arise *de novo* out of insanitary conditions.

---

[1] Cases in *A Treatise on the Continued Fevers of Great Britain*, by Charles Murchison, M.D., L.L.D., F.R.S., 3rd Edit. (1884) p. 475 et seq.

But how, you may ask, can you reconcile this view with the cases in which Typhoid has been absent and utterly unknown for many years in places in which the conditions are reported to have been insanitary, and in which Typhoid has suddenly broken out and become epidemic immediately after a single case of it had come into the locality? Here, it is commonly said, were all the conditions requisite for the production of the poison. Why then was it not produced, if it can be produced *de novo*? My answer is, that the facts reported in these cases show no more than that there were in those localities all the conditions requisite for the *dissemination* of the poison.

The *production* of the poison is something more than its *dissemination*, and may be expected to require other and further conditions. It is saying more than we know, to say that *all* the conditions requisite for the production of the poison were present in those cases. Our knowledge of the conditions is not so complete as to justify such an assertion. Besides the microbe in its *harmless* state may not be present in all localities.

This change of nature in a microscopic fungus or Bacillus may seem a bold hypothesis, but as we know unquestionable instances of the pathogenic activity being *reduced* by cultivation under special conditions, there is really no antecedent improbability in the pathogenic activity being increased, or developed, under other suitable conditions. The change or acquirement of powers or qualities may seem strange, but the strangeness disappears when we consider the rapidity with which Bacteria will pass through a great number of successive generations, and therefore the abundant opportunities, on Darwinian principles, of modifying their qualities. It is said that in a fortnight they will have 1000 successive generations. What scope this gives for the evolution of new powers! There is no difficulty in conceiving that peculiar pathogenic powers may be gradually acquired in the course of such a succession of generations. And this gradual process is not the only way in which the new property may be acquired, if the micro-organism be of the nature of a fungus. The germ of Typhoid Fever may be only the fully developed form, which a harmless, or almost harmless, fungus is capable of assuming *at one step* under special circumstances. Fungi of a larger size and kind are well known to vary in their form and properties in different stages of their life history. And, in reference to the acquisition of powers for mischief, it may be remarked, that the mildew of wheat has more destructive power when the preceding stage of its existence has been passed in the leaves of the Berberry.

I am aware that the experiments of Büchner have been discredited. That they have failed in other hands, and that the circumstances under which he conducted them rendered errors not only possible but probable. But failure to confer on the common hay-bacillus the virulent properties of the Bacillus anthracis is a failure in only one particular case, and does not settle the question in a general sense. This singular particular failure to develope special pathogenic properties in one well known Bacillus, is not decisive against the possibility of virulent properties being acquired by other micro-organisms under special circumstances. There is at least an analogy with the facts shown by Dr. Burdon Sanderson, that the products of ordinary inflammation, if transmitted by inoculation through a succession of animals, may generate a virulent poison. And the hypothesis of a gradual evolution of pathogenic powers will serve to explain why Typhoid recurs and is prevalent in the autumnal season. A warm summer, in a filthy locality, may gradually in the course of successive generations, evolve pathogenic powers in a microbe that had been harmless in the spring. And this might also be an explanation of the fact, often noticed, that an epidemic of typhoid in the autumn is commonly preceded by more than usual of diarrhœa in the summer. The summer diarrhœa would be a natural effect of the gradually increasing pathogenic power of the micro-organism, a power sufficient to cause diarrhœa, but falling short of the virulence adequate to the production of Typhoid Fever.

The epidemic subsides, though the quantity of the contagium discharged into sewers and other places, with the typhoid stools, when the subsidence begins, must be far more abundant than at an earlier period of the epidemic. It subsides, no doubt, because one or more of the external conditions are altered, the temperature being probably one of these. Under the altered circumstances not only may the microbe be less freely multiplied, but may gradually lose its virulence, as the contagia of Splenic Fever and Fowl cholera in Pasteur's experiments were gradually deprived of their virulence by cultivation under modified external conditions.

The conjecture of a gradual evolution of pathogenic virulence suggests also some explanation of the strange fact that new comers into an insanitary locality are more liable than ordinary residents to be attacked with Typhoid Fever. The latter may have been taking in the poison in its milder form, before it had acquired its full virulence, and may have thus unconsciously secured to themselves a protection like that which Pasteur has conferred upon cattle by inoculating them with the Bacillus anthracis after it had been rendered less virulent by special artificial cultivation.

It has yet to be determined, what the conditions are under which the pathogenic power of causing Typhoid can be evolved. An exact determination of all these conditions for its evolution might be of immense importance in helping us to preventive measures. The knowledge that filth is one of them, has been the main basis of our sanitary laws. The removal of that one of the probably many conditions has, in numberless instances, put an end to Typhoid Fever, and prevented its recurrence.

What the other conditions may be we have less evidence. It may reasonably be presumed that some of them are identical with those in which the infective agent is multiplied. Of these we know something, if we admit that it is multiplied in the intestines of the patient or in stagnant sewers. The conditions within the bowels of the patient are:—a temperature of about 99°F., darkness, moisture, a very limited pressure of oxygen, and the presence of certain other gases and fæcal matters. Conditions like these, except in regard to the temperature, which is lower, are present also in stagnant sewers. The absence of any one of these conditions may be fatal to the multiplication of the poison, or at least to the maintenance of its virulence. The removal or exclusion of any one of them may probably suffice to prevent the evolution of the pathogenic power.

Moisture in a moderate degree is almost certainly one of the essential conditions. This is indicated by

Pettenkofer's observations of the increase of Typhoid cases when the subsoil water is falling and their decrease when it is rising. And it is in accordance with what we know of at least one other febrific agent. Twenty years ago one fourth of the cases at Addenbrooke's Hospital were malarious. No external condition but one has been altered. The Cambridgeshire fens have been thoroughly drained. The drainage has put an end to the ague. A case of it is now a rarity at Addenbrooke's.

And ague illustrates also the importance of the moisture being limited in degree. Ague is not prevalent in districts while they are *covered* with water, but when left damp on the subsidence of floods. A like observation has been made by Dr. Thin on the Trichophyton tonsurans, the fungus of Ringworm. It can be cultivated artificially when *moistened* with vitreous humor. When *covered* with vitreous humor it ceases to grow. The *degree* of moisture makes the difference between its living or dying. Exciting inflammation of the scalp may kill the fungus by smothering it in the inflammatory exudation.

Similarly it may be with the microbe of Typhoid. Though requiring moisture, it may languish or die in excess of water. The great volume of water in the Thames may have prevented the evolution of its pathogenic powers, when the river stank with sewage in 1858.

Again, with regard to temperature. A temperature within certain limits is probably one of the conditions for the acquirement and maintenance of the pathogenic power of the microbe. The temperature of the human body is probably the temperature most favourable for its development. The temperature of the human intestines and that of stagnant sewers in summer time and autumn probably indicate the range of temperature within which it may acquire and maintain its virulence.

The filth that favours the development of the Typhoid microbe is animal filth, particularly the alvine excreta. There is no evidence that decomposing vegetable substances would suffice. These, we know, with dampness and warmth are the main conditions under which the poison of ague may be produced in abundance; but ague is not commonly accompanied by Typhoid.

There are doubtless other conditions besides animal filth, moisture, and certain limits of temperature, which must co-operate to produce the Typhoid poison. Of these our knowledge must remain very limited, until the microbe of Typhoid has been certainly demonstrated, and can be subjected to experiment.

LECTURE II.

ALCOHOL AS A CAUSE OF DISEASE

No. I.

ALCOHOL AS A CAUSE OF DISEASE

No. I.

THERE is, I think, no exaggeration in the assertion that at the present time Alcohol is the most potent of all causes of disease in Great Britain and Ireland. The total abstainers tell us that 40,000 persons die annually of its effects. Whether this estimate be, or be not, near the truth, I cannot say. There really are no data for an *accurate* calculation. But considering not merely its direct effects, but its indirect effects, through the poverty and misery to which it leads, its death-roll must be very heavy.

You must therefore be prepared, as medical practitioners, to recognise and treat its ill effects. They will come before you almost daily in practice.

There is another reason why you ought to be well informed on the subject of Alcoholic drinks. The prevalent excess in their use is the cause of so many social evils (violence, crime, misery, and degradation), that how to deal with it has long been and still is one of the most serious social questions of the day. You are of course well aware that many well-meaning persons have not only adopted for *themselves* entire abstinence from all drinks containing alcohol, but have been desirous of enforcing like abstinence on their neighbours. They have earnestly advocated measures for prohibiting the sale of all intoxicating liquors.

On the question of the use of Alcoholic drinks, if they have any use, and of their effects on the health, all medical practitioners ought to have clear and well considered opinions, as definite as scientific investigations and experience can furnish.

It is often maintained that the fact of *nearly all mankind* seeking after and manufacturing and drinking alcoholic beverages, amidst the various circumstances in which they are placed, is of itself evidence of our need of them—evidence of their supplying a want which all instinctively feel. I do not attach much weight to this argument; but there is some weight in the drinking of the energetic races as compared with Turks and Hindoos. Their universal use is at least as likely to be simply a consequence of the pleasurable exhilaration excited by them, and the relief they give to the sense of fatigue. Men drink because they find a present enjoyment in it, and a sense, transient though it be, of refreshment. The mass of mankind do not look beyond these immediate effects, and seldom consider whether they be, or be not, counterbalanced by consequences that are detrimental. There is *no sufficient evidence of Alcoholic drinks being ordinary necessaries of life.* There is no evidence whatever of their being necessary for young persons in good health and well-fed. There is evidence of their not being needed by such persons even when undergoing bodily fatigue. The evidence of this is to my mind conclusive.

Dr. Parkes has given some valuable observations on what he noticed in the 84th Regiment in which he served in India. Many of the men of this Regiment—at one time as many as 400—were total abstainers; and these men, both on marches and other service, showed themselves more healthy, more vigorous and far better soldiers than those who did not abstain.

A more remarkable and convincing instance was in the Red River Expedition under the command of Lord Wolseley. The men went through a toilsome march of four months through a very difficult country without any allowance of spirits, wine or beer. "The men," says Captain Huyshe, in the *Journal of the United Service Institution* for 1871, "of no previous expedition have ever been called upon to perform harder or more continuous labour for over four months. They were always cheery, and worked with a zealous will that could not be surpassed." At the end of this tedious march the men were pictures of good health and soldierly condition. It is important to note that they had fresh meat, bread and potatoes, and one ounce of tea every day.

A case like this is to my mind conclusive up to a certain point. It is conclusive that alcoholic drinks are not needed by healthy well-fed men in the best years of their life, whatever be the bodily work they may have to perform. It is as well to notice that these men had a daily allowance of one ounce of tea, because there is a general opinion (though I cannot say it is my own) that not only alcohol, but tea, has the power of retarding the catabolism of tissue, and thus sustaining the system.

These experiences are the more valuable because they are observations on large bodies of men. They are not liable to the objection which may be made to observations or experiments on single individuals. You will observe that I have been careful to draw from these facts no inference beyond what they strictly warrant. They prove that very hard work can be well done without alcoholic drinks. I have *not* said that alcoholic drinks are useless in *all* cases.

Having satisfied ourselves that Alcohol is not a necessary of life to young, well-fed men, even though they be engaged in hard bodily labour, the next question is whether it may have any use at all; and, if so, what? Some answer should be got from common experience, as well as from physiological experiment. The answer has been sought through physiological chemistry by many and able men. If I were to tell you of all their investigations, I should run a risk of bewildering you. For the enquiry is exceedingly complex and difficult, and investigators are far from agreed. They differ, not merely in their conclusions and opinions, but even in their statements as to facts.

We know that Alcohol, when taken in any of its diluted forms, is absorbed from the stomach almost wholly without change; and, being so absorbed, passes into the blood, and is carried by the circulation into all parts of the body. Well, what becomes of it when thus distributed? Why, *probably* in all cases, and *certainly* if *much* be taken, some part of it passes out through the lungs. You may smell it in the breath. Some of it may be by chemical means detected passing out through the skin; and some passes out through the kidneys and may be detected in the urine.

The portions which thus escape from the body unchanged can scarcely have served any important purpose. At all events, they cannot have nourished the body. They have not been assimilated, and so utilised as nourishment, and cannot therefore, in a proper sense, have served the purpose of food. What proportion of the quantity taken is thus eliminated unchanged? This has been a subject of controversy, in which opposite opinions have been advanced; some enquirers having asserted that nearly all that is taken into the body passes out again unchanged, others contending that the portion thus eliminated is but a very small percentage of the whole.

Among recent experiments are some by Dr. Dupré, and the late Dr. Anstie. Dr. Dupré took daily a certain moderate quantity of Brandy, and daily examined the amount of alcohol eliminated through his urine and his breath. He found that the quantity thus eliminated was only a very small proportion of what he took, and the quantity eliminated daily did not increase from day to day, though he continued the same daily allowance of Brandy. Dr. Dupré contends that the difference between the quantity taken and the quantity eliminated must have been consumed within the body. If it were not, the quantity eliminated would have increased day after day, because day after day he was taking a fresh allowance. The experiment is a good one though it is incomplete, as no account is taken of the amount eliminated through the skin. Other and still more recent experiments, to determine the proportion of Alcohol that is eliminated unchanged, have also been made by Dr. Dupré in conjunction with the late Dr. Anstie, and their results were published by Dr. Anstie a short time before his death. I refer to them particularly, because on this question as to the proportion of Alcohol that is eliminated they appear to me decisive.[1]

The truth seems to be, that if a large quantity of Alcohol be taken in a short time, as much as 16 per cent. of it may be eliminated unchanged; but if only a moderate quantity be taken, only a very small percentage of it escapes unchanged. The most recent and accurate experiments with more perfect tests seem to indicate that when only small quantities are drunk, less than 1 per cent. is eliminated by the urine.

---

[1] *Practitioner*, July 1874.

But what of that portion which is not eliminated unchanged,—that which remains and is supposed to be used within the body? How is it used? What purpose does it serve?

Liebig classed Alcohol with the heat-producers, and apparently with good reason; for the oxidation of its carbon and hydrogen out of the body certainly produces much heat; and the spirit-drinking prevalent among natives of cold climates seems like an instinctive craving for what is needed. The consumption of spirits in Scotland is per head much larger than in England; and spirit-drinking is general in the northern countries of Europe, and much less practised in the south. According to this view of Liebig's, its use as an article of diet would be akin to that of fat. And popular notions in England are in accordance with Liebig's theory. A man drinks Brandy or Whiskey to warm him, and will tell you no more than a fact when he says that it excites immediately a sense of warmth in his stomach, which is diffused over the rest of his body. And perhaps in a certain sense it does warm him; for by increasing the heart's action, and relaxing the capillaries of the skin, it may drive the blood more freely into the extremities and increase their warmth. It may make him, in its first effect, feel warmer, and actually be warmer, in his hands, and feet, and face.

But as regards its general and less fleeting effect on the warmth of his body—the warmth of his blood—both experience and scientific experiments have proved that the popular notion has but little foundation, and that the matter is not so simple as Liebig supposed it to be. As to experience, our sailors in the Polar expeditions, amidst the intense cold of Arctic and Antarctic regions,—the Swiss guides amidst Alpine snows,—have not found spirit-drinking serve well to warm them. On the contrary, spirits are by them avoided as injurious. Neither have experiments proved Alcohol to increase the animal heat. So far from this, the evidence goes rather to show that Alcohol actually has a tendency to lower the temperature of the blood. This is the result of numerous experiments made by Dr. Sidney Ringer and Dr. Rickards on men and rabbits, and of some subsequent experiments made by Professor Binz, of Bonn, on men, dogs, cats, and rabbits.[1]

---

[1] *Practitioner*, Sept. 1869.

These experiments suffice to establish beyond doubt that large doses of alcohol—so large as to be poisonous—will lower the temperature of animals; and this is no more than we may see in man in cases of profound and dangerous intoxication. But it does not necessarily follow that alcohol taken, as it is commonly taken, in moderate quantity—in beer, wine, or mixed spirits—as an article of diet, should have the effect of lowering the temperature. The conditions of many of the experiments were not in accordance with the circumstances under which stimulants are commonly taken by men and women.[1]

The general conclusion, therefore, seems to be, that Alcohol is not of service for maintaining the general heat of the body, but that it has, when taken in large quantity, the effect of reducing the temperature of the body, its power in this respect being small, *i.e.* not ½° F., except when it is taken in very large and injurious excess. When the quantity taken is *very* large the temperature may fall 15° F. or more. Considering the elements of which Alcohol is composed, and the heat that is generated when they are oxidised out of the body, as in the flame of an ordinary spirit-lamp, it seems strange that, in any case, the ingestion of alcohol should lower the temperature of the body.

---

[1] Dr. Parkes in *Proc. Roy. Soc.*, No. 136, 1872, and Feb. 12, 1874.

The explanation of this fact may perhaps be in the great dilatation of the cutaneous capillaries, and the consequent loss of latent heat in increased evaporation of water from the skin, besides the augmented direct loss in radiation and conduction. If the quantity taken be moderate, these losses are nearly repaired by the oxidation of alcohol permitted by the increased action of the heart bringing increased quantities of blood to the lungs. But if the quantity of alcohol taken be very large, the heart's action soon becomes depressed, the oxidation is not increased, the loss continues beyond the normal, and the temperature falls considerably. The oxidation of whatever compound can be only in proportion to the amount of oxygen inhaled through the lungs.

So much for the action of Alcohol on the temperature of the body.

In respect of increased energy for work, the popular notion is that "strong" drinks give strength. The name may have had something to do with the notion. It is certainly an error as regards healthy well-fed man.

Besides the negative evidence derived from the Red River Expedition and other instances of work done without Alcoholic stimulants, we have positive direct evidence, derived from carefully conducted experiments, that in any considerable quantity they lessen a man's power for work. Dr. Parkes' experiments are conclusive on this point. It is plain then that alcoholic drinks in quantities, which, however considerable, are no larger than are occasionally taken, if given either before or during work to a man otherwise well-fed, will lessen, instead of augmenting, his powers for bodily work. It is also plain, that, as restoratives, they are, at the best, inferior to some other nutritive fluids. Yet we must not deny them some usefulness as restoratives.

Nevertheless, since Alcohol does not aid in keeping the body warm, nor augment the energy for work, does it serve any other of the purposes of food? In Cambridgeshire, among the lower classes, beer, wine, and spirits, are commonly spoken of as *nourishment*: indeed, the word 'nourishment' is applied to them exclusively. This is the popular notion, and a very mischievous one it is.

Considering the chemical composition of Alcohol, it is not likely that it contributes directly to the nutrition of the tissues. But indirectly it may serve the purpose by preventing waste, by checking metabolism; by its oxidation it may save materials of the body, which would otherwise have been oxidised. That it does in some way (probably in this indirect way) serve to sustain the body seems certain. Every medical practitioner must have met with cases of persons, who for weeks or months together have taken scarcely any other form of nourishment than beer, wine, or spirits, and yet were able to live on, and with little or no loss of weight. Dr. Hammond's experiment also seems conclusive.[1] Having lived for some days on a diet insufficient to maintain him, and thus losing weight daily, he added to the diet a certain quantity of Alcohol. This not only arrested the daily loss, but occasioned a daily gain in weight. It must, therefore, be admitted to be, in some sense, a food. It does not follow that it is a wholesome food. It would seem that by presenting a material for oxidation, it prevents or lessens the oxidation of the other blood-materials or tissues. Of course in this way it must be a source of heat, but it does not raise the temperature of the body, because the quantity of oxygen being the same, the amount of oxidation is the same, and the oxidation of the alcohol produces no greater heat than the oxidation of other materials would have done.

---

[1] *Physiological Memoirs*, by W. A. Hammond, M.D., 1863, p. 47 *et seq.*

So you see the conclusions which may justly be drawn. If men be in the prime of life, healthy and well-fed, alcohol is, as a rule, not needed to enable them to go through bodily work, even though the work be very laborious; and, if the allowance exceed a moderate quantity, it even lessens their working power if given before or during the work. But that, under peculiar circumstances of great fatigue and exhaustion, it may be, and probably is, useful if taken together with food at the close of the day's work.

This is valuable experience. But it does not settle the *whole* question as to the use of Alcoholic drinks. There is still the condition of mental fatigue or exhaustion, and that of aged persons. We know that it is serviceable in many diseases when the patient is much exhausted; and analogy is in favour of its usefulness in mental exhaustion and the low condition of old age. "*Vinum lac Senum, lac vinum infantum.*" It is well known that some of the most brilliant writings in our language have been produced under the inspiration of wine. But this is no proof of its having been wisely used. It may have cost more than it was worth in the after consequences.

Bearing in mind that beers and wines contain other materials besides alcohol, which are undoubtedly nutritive and serviceable in digestion, their claim to be considered useful is a better claim than that of spirits, and it must in fairness be admitted, as a matter of common experience, that a moderate quantity—say two or three glasses—of beer or wine may be taken daily by most men without appreciable detriment to health, and by many persons with the appearance at least of some advantage. Wine or beer relieves the sense of fatigue—particularly mental fatigue,—and when taken together with food by an over-tired man seems to help the digestion of his food, which is apt to be slow and laboured when a person is excessively fatigued. When taken on an empty stomach the benefit, if any, is transient, and is more than balanced by the ill consequences that follow. But when taken in small quantities with food in states of exhaustion, either mental or bodily, their benefit is less transient, and more certain.

No doubt, if a man is often experiencing excessive mental fatigue, his wisest course is to reduce his labour.

This is the only safe course, if the labour be daily, and be part of the business of his life. But the circumstances calling for excessive labour may be temporary, and may be such as to make him feel it his duty to continue his work even at some risk of health. In some of these cases, two or three glasses of wine a day may enable him to continue it. Under these circumstances, wine, taken in small quantity and with food, may be really useful. You will observe that these circumstances are special, and narrowly defined. Under ordinary circumstances, and by young men, wine should be regarded and used only as a medicine. About one ounce of absolute Alcohol is the maximum which, according to experiments, can be taken daily without disadvantage. This is equivalent to about five or six ounces of sherry, or twice as much of claret. More than this has been proved to be actually injurious.

One fact more as to the effects of Alcohol. Among the various and discordant results of different experimenters there is one point on which they are all agreed. This is, that Alcohol in moderate quantity has the effect of increasing the frequency and force of the heart's action, when taken by persons in health. This will account for its beneficial effects in states of exhaustion or faintness,—the beneficial effects immediately observable. But to this fact of immediate augmentation of the frequency and force of the heart's action, Dr. Parkes has added the important observation, that, not only is the augmentation temporary only, but that it is followed by a decrease, so as to make the total amount of the heart's action, on the average of the twenty-four hours, the same as it had been prior to the ingestion of the Alcohol. The immediate advantage has been purchased at the cost of some power. The augmentation in force and frequency is followed by a diminution in force and frequency.

Numerous experiments have been made with the view of determining the influence of the ingestion of Alcohol on the excretion of nitrogen and carbonic acid. If the results had been of a marked kind, and the same in the hands of different experimenters, they would have had great scientific value. If it had been found, as was anticipated, that the taking of alcohol considerably lessened the excretion of nitrogen and carbonic acid, the inference would have been justified, that Alcohol checked the metabolism of the tissues and so lessened waste. There is good reason for believing that it actually has this effect in certain states of disease, as in some fevers, in which the waste is abnormally rapid; and the effect in such cases is undeniably beneficial. If it were proved to have the like effect with persons in health, it would indicate the supporting power which by many persons is claimed for it.

And there is another, and very different inference that might be justified. To check the metabolism, which is indicated in the excretion of nitrogen and carbonic acid, is to check the chemical changes in the body which are concerned in the action of muscles and brain and nerves: it is to lessen a man's activity of muscles and brain. This may be highly beneficial for a sick ill-nourished man, but the reverse of beneficial for a healthy man engaged in the business of life, and taking a full diet.

But the results of these experiments on the influence of Alcohol over the excretion of nitrogen and carbonic acid are to my mind insufficient to justify any confidence in drawing conclusions from them. They are by no means all of them in accordance with one another. On the whole they do seem to indicate that Alcohol does, to some small extent, lessen the excretion of nitrogen and carbonic acid; but even this is not certain when the experiments are made (as by Dr. Parkes) on healthy men supplied with a sufficiency of food.

The problem as to the use of Alcohol is not yet entirely solved. We must be cautious in deducing *general* conclusions from experiments, which give, as experiments can only give, *particular* results. The exactness with which chemists express their results in number and weight is apt to be imposing and misleading. The accuracy naturally associated with figures is accorded to their results, and not only to their results, but also to their inferences. But we must not forget that, however accurately they may have conducted their chemical processes and stated the results, the soundness of their conclusions must depend on something more. In the first place it must depend on their having comprehended *all* the conditions of the problem, and excluded all the modifying sources of error. And in the next place, though the results of their experiments may be true facts as far as they go, these results may have been interpreted wrongly or too generally. So it is easy to understand how the conclusions of different investigators may disagree in so complicated a question, and even the results of their experiments be discordant. The discordance in results is due in great part to a difference of the conditions in different experiments. The effects of alcohol are not in proportion to the quantity taken. Six ounces will not produce double the effect of three ounces, but may produce effects of a different or even opposite kind.

And the chemical evidence, which had been so much relied on, was seriously unsettled a few years ago by Dr. Dupré.[1] He has thrown doubt on the tests ordinarily employed to detect the presence of minute quantities of Alcohol in the urine, and which had been relied on as proof of its elimination by the kidneys. In the urine of a person who had wholly abstained from alcohol for six weeks, and even after an abstinence of two years, Dr. Dupré has found a substance which gives the same reactions as those which have been interpreted by experimenters as proof of the presence of small quantities of alcohol. So you see the difficulties of the question as to the effects of alcohol on the healthy man, and how far it is from being entirely settled by chemists and experimental physiologists.

I have spoken of Alcohol. But of course men do not drink Alcohol. They take drinks that *contain* Alcohol. The drinks that contain it are familiar to all of us, and are mainly of three classes: Beer, Wines, and Spirits. These resemble one another in the one point of containing Alcohol, but differ materially from one another both in the proportions of it they contain, and also in some other respects. These differences are familiar to our taste. Let us see what they are chemically.

---

[1] *Practitioner*, April, 1872.

The various kinds of Beer and Porter not only differ widely from Wines and Spirits, but also differ among themselves. The proportion of alcohol averages about 5 per cent., but its quantity in different beers varies from 1 per cent. to nearly 10 per cent. The amount of solid matters is about 9 per cent., all of which is gum and sugar, except small quantities of bitter matters, free acids and salts. Free carbonic acid is also present in beer, and a little of essential oils. Now, the solid matters—the gum and sugar—are plainly nutritious. They at all events supply the elements for fat. Indeed it is a common observation, that those who drink much beer are apt to grow fat. The free acids—which are of numerous kinds, malic, acetic, lactic, gallic—may (some of them at least) quicken appetite and assist gastric digestion. So may the bitter extract. The salts are doubtless useful in the body; and so of course is some nitrogenous matter, but the quantity of this contained in beer is minute.

The adulterations of Beer are numerous and various. I cannot say they are unimportant, but time would not allow of my entering into any discussion of them. It is as well, however, that you should be aware that these adulterations are introduced chiefly by the retail-dealer; so that public-house beer is more likely to be unwholesome than that obtained directly from large breweries.

In Wines the quantity of solids varies from 3 per cent. to more than 14 per cent. Most of these are like the solid matters in Beer, viz. sugar, free acids, salts, and a small quantity of albuminous matter. Wines also contain numerous Ethers, from which chiefly they derive their flavour and bouquet; and also an extractive colouring matter. This colouring matter is derived from the skins of the grapes. It is originally blueish or greenish; but the free acids change it to a red. The acids are numerous. One of the most important is the oenanthic, which is derived, not from the juice of the grape, but from the stones, stalks, and skins, and particularly from the waxy fat which gives its bloom to the grape. It is this oenanthic acid which by its action on the Alcohol forms the Œnanthic Ether; and in like manner the other Ethers are generated by the action of the various acids on the Alcohol. They are more abundant in old wines, being gradually developed during the keeping of the wines. This is the reason that old wines have more flavour and bouquet than newer wines, and are accordingly more valued by connoisseurs.

But it is said that some merchants try to give these old flavours to new wines by the addition of minute quantities of artificial ethers; and even in the making of wine it is not uncommon to add to the flavour by putting the flowers of the lime-tree or fragrant leaves of other kinds into the must while fermenting. The colour is often deepened by the juice of Elderberries or Blackberries. Many wines are also *fortified,* as it is called, by the addition of brandy, professedly for the purpose of enabling them to bear what they have to go through in transport. Both Sherry and Port are thus fortified, but with an important difference. The brandy to fortify Sherry is not added until the fermentation of the must is completed. The brandy is added to the Port before its natural fermentation is thoroughly complete. The addition of the brandy arrests the fermentation, and occasions the retention in the wine of some of the saccharine and other ingredients that might be changed or lost in the completion of the fermentation. Some richness and body are thus preserved in the wine that would otherwise have been lost, but the wine is rendered less wholesome, and gets somewhat of the character of mixed spirits. Moreover, the brandy used is not always of the best, being commonly not such as is distilled from wine, but British Brandy made from malt and exported to Portugal for the purpose.

Of course I have been speaking of actual wines, not of such stuff as *Hamburg* Sherry, and other abominable compounds that are concocted of Potatoe-Spirit, and which contain scarcely a drop of the juice of the grape, and yet are sold in large quantities with much pecuniary profit to their concoctors, and drunk in large quantities with much detriment to the health of the drinkers. These, considered as drinks, come more properly under the class of mixed spirits than under that of wines.

Considering real wines dietetically, their most important ingredients are the Alcohol, the Acids, and the Sugar. The proportions of these are our chief guides in recommending one wine or another under varying conditions of life or varying forms of disease.

Here are some tables of analyses of wines by Sir R. Christison, Dr. Bence Jones, and Dr. Dupré. They are analyses of wines as supplied in the United Kingdom, and are therefore for our purpose practically preferable to foreign analyses. Our concern is chiefly with the wines drunk in England, not with what wines bearing the same names are, or may be, elsewhere.

ANALYSIS OF WINES.[1]

	Alcohol per cent.	Acid per ounce. grains.	Sugar per ounce. grains.
Port	21·5	4	20
Sherry	20·0	3·8	6
Manzanilla	15·7	4·5	2
Marsala	20·8	4·3	10
Madeira	19	4·8	20
Tokay	16	9	74
Bordeaux	10	5	0
Burgundy	11	5·5	0
Sauterne	13	5·5	5
[2]Hock	10·5	5·3	0
Moselle	9	6	0
Champagne	14·5	5	26

---

[1] *The Chemistry of Wine*, by G. J. Mulder, edited by Dr. H. Bence Jones, 1857.

[2] Sugar has been found by some German chemists.

Many of these quantities vary much in different specimens of the same wine. In Champagne the amount of sugar in an ounce of the wine will vary in different samples from 6 to 28 grains; in Madeira from 6 to 66 grains; in Port from 16 to 34 grains.

PROPORTIONS OF ALCOHOL IN WINES.[1]

	Percentage of Absolute Alcohol.
Port Wine	16·20
Sherry (old)	15·37
„ (weak)	13·98
„ (strong)	16·17
Claret (first quality)	8·99
„	7·72
Rüdesheimer (first)	8·40
„ (inferior)	6·9

If the percentage of Alcohol exceeds a certain amount (about 14), the wine must have been fortified with spirit, since fermentation is brought to a standstill by the presence of that amount of Alcohol.

---

[1] Christison's; *A Manual of Public Health*, edited by Ernest Hart, 1874, p. 359.

COMPOSITION OF DIFFERENT WINES.[1]

Percentage by Weight.	Light Claret, 1865, price 15/- per doz.	Rhine Wine, Rauenthaler, 1864, price 18/- per doz.	Rauenthaler, 1862, price 54/- per doz.	Port Wine, 1864.
Alcohol	9·05	7·44	8·83	18·56
Total dry residue, including mineral matters	2·17	2·207	1·867	7·3
Sugar	·047	traces	·062	4·9
Alcohol obtainable from the Ethers	·048	·043	·046	·043
Free fixed Acid, expressed as Tartaric Acid.........	·338	·674	·445	·307
Free Volatile Acid, expressed as Acetic Acid...........	·222	·118	·178	·084

As articles of diet, taken with meals, spirits, wine or beer, in moderate quantity, may be of some service by stimulating the stomach, and thus augmenting both the secretions of gastric juice and the muscular movements of the stomach. But, as to wine and beer, it is doubtful whether these advantages be not more than counterbalanced by their action in retarding the chemical processes of digestion. The acids contained in them inhibit the action of saliva on starch, and so prevent or retard the salivary digestion of farinaceous food; and wine also retards the peptic digestion.[1]

---

[1] Dupré's; *A Manual of Public Health*, edited by Ernest Hart, 1874, p. 360.

The Alcohol contained in genuine Beers and Wines is the immediate result of fermentation, of the change by which sugar—the sugar of malt or other sugar used in brewing, or the sugar of grape-juice—is converted into Alcohol and Carbonic Acid.

The Alcohol in Brandy, Whiskey or other spirits differs from that in Wine in this respect, that it is obtained by distillation from a liquid which has previously fermented. Distilled liquors, or Spirits as we call them, are thus made in all parts of the world from vegetable matters, which either primarily contain sugar, as the juice of the grape or cherry, or secondarily when beginning to germinate as in the malt of barley. A spirit called Awack is made by Hindoos from Rice; another called Toddy from the Cocoa Nut; Chica from Maize in S. America; Koumiss by the Tartars from mare's milk. Anything which contains sugar, or in which sugar is developed in germination, can be made to ferment, and to change its sugar into

---

[1] Sir Wm. Roberts, M.D., F.R.S., *British Medical Journal*, Aug. 1, 1885, p. 190.

Alcohol or Carbonate Acid; and the alcohol thus formed may be separated from the other matters by distillation. Spirit is thus procured in North Russia from Iceland Moss, and has been made even from sawdust. The spirit from whatever source obtained is apt to retain some traces of its origin,—the different spirits vary in flavour, but their Alcohol is enormously greater than the small quantities of other matters contained in them. They are, approximately, alcohol and water, and their effects as beverages give us a much more exact idea of the action of Alcohol *per se* than the observed effects of the more compound beverages of Beers and Wines.

Brandy contains several ethers. Rum contains a good deal of Butyric ether, to which its peculiar smell is due: Gin is flavoured with oil of Juniper and other aromatic matters; Whiskey contains fusel oil. But the total solids are exceedingly small, as this table will show.

	Solids per cent.	Alcohol per cent.	Acidity per oz. reckoned as Tartaric Acid.	Sugar per cent.
Brandy	1·2	50—60	1 grain	0
Rum	1	60—77	·5 „	0
Whiskey	·6	50—60	·2 „	0
Gin	·2	49—60	·2 „	0

Whatever differences of opinion there may be as to the physiological action of Alcohol, or as to its usefulness when taken in moderate quantity, there is no difference whatever among reasonable men as to its injurious effects when taken in excess. These effects are not limited to misery, disgrace, and disease. Death—premature death—is their end. The fact is only too familiar to the experience of medical practitioners. The following statements taken from Neison's *Vital Statistics* are the results of calculations based on 357 cases well authenticated:

A temperate person's chance of living is		*An intemperate person's chance of living is*	
At 20 years of age...	44·2 years.	At 20 years of age...	15·6 years.
„ 30 „ „	36·5 „	„ 30 „ „	13·8 „
„ 40 „ „	28·8 „	„ 40 „ „	11·6 „
„ 50 „ „	21·25 „	„ 50 „ „	10·8 „
„ 60 „ „	14·285 „	„ 60 „ „	8·9 „

And here is another view of the matter. The annual death-rate of

Beer-drinkers (intemperate)	is nearly	46	per 1000.
Spirit-drinkers (ditto)	„	60	„

These ill-effects which bring about death are many and multiform. They have been observed in nearly all the organs of the body.

As the alcohol accompanies the blood, and circulates through the various organs, it affects them all. It must affect the blood itself, and the vessels containing it, and these are doubtless the conditions producing the hœmorrhages so frequent and serious in habitual drinkers. Here are some cases in illustration:

1. A married man, aged 48 years, in well-to-do circumstances, consulted me about the middle of 1867. He had been in the habit of drinking too much beer, and had gradually lost all appetite, eating scarcely anything except at dinner, and then but little. A few days before I saw him he had optical hallucinations, such as occur in delirium tremens, as of insects crawling over him, human figures, a cat with a calf's head, etc., and had acted or talked strangely. Under treatment he became convalescent. I saw him again in January of the following year. He had not adhered strictly to my regimen of four glasses of Sherry; he had been drinking beer. In the last few weeks he had become subject to attacks of pain across the chest, impairing his respiration. They came on when he was walking, and not only after meals. The pain extended from one arm to the other

—from about the insertion of the deltoid muscle,—and was accompanied by a loss of power in the arms, and a sense of numbness extending down to his fingers' ends. He had much gastric flatulency. He also complained of *throbbing* in the chest, but I could perceive nothing abnormal either by hand or stethoscope. He had not much sleep at night. With the use of pepsine at breakfast and dinner, and a return to a careful regimen, he greatly improved, and by the end of February he was fairly convalescent. I was sent for, however, on one night in January, 1869. The patient's nose had been bleeding off and on for thirty-six hours. He had become weak and very nervous. The bleeding recurred but little during the two following days, but on the morning of the third day he had some optical and acoustic illusions, and two days later well-marked delirium tremens came on. Opiates, twice tried, completely failed, doing apparently more harm than good. The improvement seemed to begin after he had taken some strong soup. He had returned to his intemperate habits four or five months before this attack. He recovered, but did not maintain the habits of temperance which I so strongly enjoined, and he had another attack of delirium tremens in the succeeding December. After this attack he became more temperate in his drinking habits, but died from the effects of his former indulgence rather more than two years later.

2. An auctioneer, aged 39 years, consulted me in September 1869. He was a hard drinker, chiefly of beer. Three weeks before, he had violent epistaxis, and lost much blood. More recently he had had dyspnœa on exertion, enlarged belly and swollen legs. He looked pallid and ill. He retained, however, a good appetite, had not lain by, and was unwilling to discontinue attention to his business. His legs had long been affected with chronic eczema or psoriasis. They were then largely swollen and hard. The œdema extended over the parietes of his abdomen, and perhaps also to his hands. The abdomen was distended; it contained a considerable quantity of fluid, but the distension was in a greater degree due to flatus. Some days before he was jaundiced, and had had to take large and repeated doses of medicine to obtain evacuations. Three or four such had, however, been obtained. The only pain he had was at the umbilicus, which was somewhat tender on pressure. There was no sign of enlargement of liver. His tongue was furred in the middle, reddish at the edges. His pulse was about 100; there was a roughish

systolic murmur at the base of his heart. Four days later he complained of a gnawing pain at the epigastrium, and the abdomen was much distended with flatus. The dropsy was increased, and there had been another attack of epistaxis. A week later the dropsy had nearly disappeared, and the abdomen contained very little fluid. He eventually became well enough to attend to his business, and continued to do so until a few days before his death two-and-a-half years later.

3. A farmer, aged about 45 years, naturally fat and flabby, habitually drank largely of beer and gin. I saw him about the middle of 1855, and until quite recently he had been wholly neglectful of medical advice. For the last eight weeks he had been suffering from epistaxis, which had been so urgent and excessive as to have completely blanched him, and reduced him to a state of dangerous weakness. When I saw him he was lying on his back in bed, and could not be raised without alarming faintness. He had kept up by means of cold beef-tea and port wine, taking nearly a bottle of the latter in twenty-four hours. His hands and tongue were tremulous; pulse very weak and rather indistinct. The bleeding had ceased for about five hours; the last blood had a watery appearance. There were a few small

ecchymoses visible in his arms. The impulse of his heart was not excessive. A month later he was still lying a-bed in a weak state, though the epistaxis had not recurred. He was then growing fat, and occasionally there was a little oozing of watery blood, apparently from the fauces. Rather more than two years later I learnt from a neighbour of his that he had persisted in his intemperate habits, and had had more attacks of epistaxis, so profuse as to put him in peril of his life.

4. This was the case of a brewer, aged 37 years, who, however, spent most of his time in the country taking active bodily exercise. He had drunk largely, formerly of beer, but of late his drink had been brandy and water. He declared that a bottle of brandy lasted him two days, but I found that this statement was below the fact. I saw him first in February 1856. In the preceding August he had vomited a large quantity of blood. Since that time he had been subject to vomiting on about one day in every week, his stomach rejecting almost everything on those days. Later on the vomiting had continued two or three days at a time, and it was on the occasion of the worst of these attacks that I saw him. He had then become so weak as to excite great alarm. His face was haggard.

In what he had vomited I saw one or two minute specks of blood. His pulse was above 100, very small and feeble. There was some fulness, tension and well-marked tenderness in the epigastrium and below the margin of the right ribs; in the latter region a dulness of percussion indicated that the liver extended for two inches below the margin. There was no jaundice or dropsy. The heart's impulse was somewhat lower than in health, and there was percussion-dulness more than two inches in extent transversely. His mind was not disordered, and he had always slept well until the preceding night. Three days later the vomiting had almost wholly ceased; he had kept down milk with lime water, and had also taken small quantities of beef-tea and jelly and arrowroot. Delirium had, however, gradually commenced, and was increasing, and he was also sleepless. He had hallucinations of persons coming about the house at night. He recovered, and by the end of the following month was pronounced to be convalescent. Three months later, without any unusual exciting causes, besides his brandy, hœmoptysis came on, and continued off and on for twenty-eight hours. More than a pint of unmixed blood had been coughed up. Under careful treatment he improved somewhat, but he died six weeks after the first attack of hœmoptysis.

5. In this case a tradesman, aged 35 years, lost his wife in the beginning of 1860 from the effects of brandy-drinking. He had himself been practising the same habit in the utmost excess both by day and night,—taking a bottle of brandy to bed with him. He was persuaded to make a change in his habits, and I prescribed Liq. Morph. Acet. mx. ter quot. His bowels were loose, and he had no appetite; and I found on examination that his liver was very greatly enlarged, extending below the navel. He was a small man, and much weakened by his recent excesses. A month later, under treatment, his liver was considerably reduced in size. He continued to abstain from brandy, but not from beer and wine. He complained that he could not sleep at night. I saw him again a year-and-a-half later. In the meantime he had married again. His habits were not so intemperate as formerly, but he still drank spirits, had no appetite for breakfast, and never eat any. His liver was greatly enlarged, reaching nearly as low as the navel. He had had diarrhœa for some time; it began about ten weeks before I saw him, but ceased during a fortnight's visit to the sea-side. While at the sea-side

he had enormous hœmorrhage from the gums, which was with difficulty arrested. The diarrhœa returned when he came home, and when I saw him he was pale and slightly jaundiced. His stomach was very irritable, he could take no food and gradually sank.

LECTURE III.

ALCOHOL AS A CAUSE OF DISEASE

No. II.

ALCOHOL AS A CAUSE OF DISEASE

No. II.

The stomach being the organ which first receives the Alcohol is obviously liable to suffer from it, and it does suffer much. The appetite of tipplers falls off, and in most advanced cases is entirely lost; vomiting becomes habitual and retching, particularly in a morning. With retching in the morning there is a want of appetite for breakfast. A peculiar dyspepsia comes on with a sinking sensation at the epigastrium, which can be temporarily relieved by a fresh dose of the stimulant, the apparent remedy being thus a fresh poisoning. In course of time chronic gastric catarrh is set up, the stomach is permanently injured; and on *post mortem* examination it is found that its connective tissue is morbidly increased, and its glandular structure more or less atrophied. Here are some illustrative cases.

1. This is the case of the wife of a brewer, aged about 35 years. She had an ill-regulated temper, and was of a wilful disposition. She had two months before

lost her only child by hydrocephalus, and had since been out of spirits and unreasonably jealous of her husband. She had also during these two months had several attacks of vomiting and irritability of the stomach, which had been relieved under medical care, but had recurred. She had during this time taken *very* little food, and very much of stimulants. On the morning of the day after Christmas Day her regular medical attendant, being summoned, found her in a state almost of collapse, and with her stomach so irritable as to bear scarcely anything. I was summoned by telegraph, and arrived soon after 2 p.m., and found she had rallied a little, but was still excessively weak. I was shewn a vomit, which consisted of egg and sherry, and some mucus. I found her epigastrium tender; the tongue small and rather red; the pulse small and weak; and the heart's impulse and sounds feeble. There was great thirst, and the bowels had not been recently relieved. She died about five weeks later. I learnt that she had in that time occasionally improved so as to take food, but then relapsed—taking unduly of stimulants. A week before her death she was noisily delirious, and her medical attendant stated that she had delirium tremens.

2. The wife of a professional man, aged 40 years, had been for some years addicted to drinking. She was frequently ailing, and when I saw her she had been ill for some days. The stomach rejected nearly all food; there was great thirst; and the pulse was 100, small and weak. Her mind was wandering and her memory poor; she had definite delusions. The epigastrium was somewhat tender; the temperature was nearly normal; and there was cough, with some muco-purulent sputum. There was bronchial respiration at the inferior angle of her right scapula. Her complexion was clear; her bowels were habitually inclined to looseness. She was so weak as to be unable to raise herself in bed without assistance. Her pneumonic symptoms subsided, but diarrhœa supervened, and caused fatal depression. She died six days after I saw her.

3. A druggist, aged 27 years, consulted me in 1862; he looked eight years older than he was. During the last few days he had been unable to keep anything (even a mouthful of water) on his stomach. The morning when I saw him, however, he had kept down half-a-glass of brandy. There was no epigastric tenderness; the tongue was covered with thick white fur; the skin was perspiring; and the pulse was soft. He had

had similar attacks twice before, and he attributed them to drinking. A year before, to drown some care or sorrow, he had taken to drinking, and, with one or two intervals of efforts to refrain, he had continued it to that time. He had drunk anything and everything. Spirits of wine mixed with water was for a time his chief drink; then, just before I saw him, it had been gin. He had drunk half-a-pint of spirits of wine in the day, but he said that he had never been drunk, only pleasantly exhilarated, and he was sure that nobody, not even his wife, was aware of his habits. He had not been able to resist the temptation or craving, but had, when I saw him, strongly made up his mind to do so. He had no enlargement of his liver; but he slept badly at night, and had tremor of his hands. The excessive irritability of his stomach yielded to treatment, and he did resolutely abstain from all strong drink except a glass of bitter beer twice daily. For three or four days his hands were very tremulous, and at night he had terrible hallucinations, but then the tremors ceased and he rested at night. He ultimately recovered.

4. This was the case of the wife of a brewer, aged about 35 years, whose medical attendant declared her to have been an habitual drunkard. I saw her in the

autumn of 1865; during the preceding summer she had been much troubled with nausea and sickness, and anorexia, and had taken scarcely any solid food. For some few days before I saw her she had been jaundiced, and the jaundice persisted. Her tongue was furred. Her abdomen was very large, but I could not feel the liver; percussion was pretty clear, except in the right lumbar region, where it was rather dull. Her urine was loaded with bile. Her bowels, I was told, were habitually moved about three times a day, but a motion shown to me was solid and it was also white. Her pulse was about 90, and very weak. She gradually sank, and died about a week later.

5. A brewer, aged 34 years, consulted me in August 1864. From his boyhood he had been in the habit of drinking fermented liquors, and for many years he had drunk them to excess. At the time when I saw him he drank a bottle of gin daily besides "lots of beer." He drank many times in the night, as well as in the day, to relieve a sensation of sinking, and was violent when the drink was denied to him. There was perfect anorexia, and if he took any food whatever his stomach rejected it. During the last few days his abdomen had become enlarged. There was ascites, and his liver could

also be felt. His bowels were habitually relaxed; the urine clear and high-coloured; and his hands were shaky. His health had been failing for twelve months. His pulse was 120, small and weak. Rum and milk was rejected by the stomach, but milk and soda-water had been kept down in small quantities. He had taken scarcely any solid food for six weeks. At the end of a week he was able to take solid food. He took small quantities of chicken and mutton. His daily allowance of stimulants was largely reduced, and were taken in small quantities at a time, and diluted. His stimulants were further reduced four days later; but his appetite for solid food continued to be very bad. At the end of a month he showed increasing weakness, and he kept to his bed. From this time he never rallied, and he died at the end of about two months from the time I saw him.

The Liver suffers in almost all cases of habitual alcoholic excess. The morbid change is either fatty degeneration or cirrhosis. The former is more associated with excess in beer and wine; the cirrhosis with excess in spirits. In cirrhosis there is an increase in the connective tissue of the liver, which occasions an enlargement of the organ. This presses upon the blood-vessels and bile ducts and secreting cells; and when this new connective tissue contracts, as it does, after a time, to such a degree that the liver becomes smaller than its normal size, then the portal vessels and bile ducts become more and more obstructed. The obstruction of the portal vessels leads to ascites, or hœmorrhages from the stomach, piles and hœmorrhages from the bowels. The obstruction and obliteration of the smaller bile ducts cause jaundice. The spirit-drinker's liver, when the mischief caused to it is well-marked, has given rise to the name of Hob-nailed liver.

Here is the case of a farmer, aged 37 years, stout in figure, but with a face pale and smooth for a farmer. His habits were intemperate as to drink, and had been so for years. He had lately suffered much from hœmorrhage from the bowel. The blood had been sometimes red, at other times black, often clotted. At one time he had external piles. There was no jaundice. His bowels were habitually relaxed, and he had prolapsus ani. His appetite was bad, and he suffered from morning sickness. There was no tenderness in the hepatic region, but he often had pain at the umbilicus before his bowels were moved. His pulse was 88.

And here is another case of a commercial traveller, aged about 52 years, who had formerly drunk hard. He had had jaundice and ascites, but when I saw him he was free from these. He was then suffering from phthisis. His chief complaint was of a cough, which he had had for months, of retching and anorexia.

This too is a case of attacks of gall-stones, showing the effects of former intemperance in drinking. A farmer, aged about 48 years, having formerly lived freely, had been more temperate later, especially for the three months before I saw him, and while he had been under medical treatment. His nose was large and red. His conjunctivæ were yellowish. He had had three attacks of sudden severe pain in the hepatic region lasting about twelve hours. The first attack was the occasion of his seeking any medical advice, and one of the attacks had been attended with sickness and jaundice. What he complained of to me was sinking at the pit of his stomach. That part was tender after some pressure. His appetite was moderate, but not good at breakfast. The sinking sensations were relieved for a while by food. His tongue was furred; his pulse 70; and his bowels were pretty regular. He slept badly at night.

The Kidneys also are liable to suffer. One or perhaps two of the forms of Bright's disease may be brought on by the habit of taking daily too much of alcoholic drinks. It may be brought on even when the quantity taken is far short of what is commonly regarded as excess. This is certain in the case of persons who have inherited a gouty constitution. I believe I have seen it in others not gouty, who, without falling into what would be called excess, have daily taken five or six glasses of wine, and were not careful to clothe themselves warmly. The effect under these circumstances is to throw an excessive work of secretion on the kidneys, and induce Bright's disease—in some cases suddenly after a chill, in more cases gradually—so gradually that the commencement of the disease may attract no notice, and treatment may be delayed until after irremediable mischief has been done.

A young farmer, aged about 30 years, suffered from general œdema, which was most visible below his eyes and in the lower extremities, more particularly in the left. His urine was pale, acid, and albuminous. He had some pain in the loins. He had been in the habit of taking too much of fermented liquors. The duration of his disease was uncertain. His tongue was whitish; he had retching in the morning, with occasional vomiting;

there was anorexia; his bowels were regular; and he suffered much from restlessness at night. Three days later there was fulness with much tenderness at the epigastrium, and the liver was apparently much enlarged—more so than when I first saw him—but no jaundice. There was still the same kind of urine and but little of it, not more than three-quarters of a pint in twenty-four hours. He succumbed a few days later.

The Heart also and the Lungs suffer. The heart is apt to undergo fatty degeneration, or in certain circumstances hypertrophy. The arteries too become atheromatous, and aneurism may be a consequence. Chronic Bronchitis and Phthisis are, I am sure, more frequent among those who drink habitually to excess than they are among temperate persons. Pulmonary phthisis is in many cases their final malady.

A retired naval captain, aged 55 years, was in the habit of drinking nearly a bottle of wine daily, and of smoking eight or nine cigarettes. He had at times had trembling hands, probably in consequence of his intemperance. He had been subject also to occasional coughs, which occurred in violent paroxysms, and in these fits of coughing had more than once had seizures of giddiness. When I saw him he was labouring under one of his coughing illnesses, which had lasted the unusual period of five weeks. Five days since, in one of the violent fits of coughing, he fell to the ground insensible, but consciousness returned almost immediately. The day before I saw him he became a little lame, having, he said, a weakness in his right ankle joint, and some swelling and redness in the great toe. There was sibilus here and there in his lungs; the uvula was rather long; his pulse was about 90, not weak; tongue nearly clean; and his bowels were reported to be free, which was their habit. His urine was reported to be like pea-soup, and to deposite a sediment like cayenne pepper. His eyes were venously congested. During the previous four days he had no stimulants, and had been on a very moderate diet. Two years later he had an attack of gout; but I was not consulted by him till two years later still. This was in the month of January. At the end of the preceding October he had slight expectoration of blood, which ceased in two or three days. Some months previously, an hœmorrhoidal discharge, which had been habitual, ceased. This hœmorrhoidal discharge had not returned, but, during the five days before I saw him again, he had again been expectorating blood in small quantity. There was no auscultatory evidence of disease. The chest was extraordinarily large. Wine had been altogether discontinued during the last three days. I advised continued abstinence from wine until hœmorrhage had ceased, and then a return to it *gradually,* but never to exceed a pint of wine per day.

The following is the case of a man, aged about 48 years, living on a small independence. He complained to me in July 1858 of a pain about his left mamma, which was the more felt when he drew a deep breath. He had been troubled with it for a week or two. He had previously been ailing for five or six months with cough and morning expectoration, and had lost a stone-and-a-half in weight, a considerable loss for a small man, as he was. He had a bronzed complexion, and the general appearance of health. His tongue was whitish, and his pulse 104 and strong. His daily allowance of stimulants was three pints of mild ale, besides on some days a little wine or mixed spirits. He smoked from three to five pipes daily. He eat very little for breakfast, and not often any supper. His appetite had always been a poor one from his boyhood. He slept well. I reduced his allowance of stimulants to three *half*-pints of beer, and his smoking to only two pipes daily. Six days later 1 observed that his complexion and conjunctivæ were yellowish. His tongue was furred, and his bowels had become costive. He complained much of his cough, which was exceedingly distressing at night, being both frequent and violent. I could find no certain sign of disease in the chest, but the expiratory murmur below the left clavicle was a little prolonged. He looked ill, and I suspected that he had suffered from drinking daily a little too much. This was confirmed three days later, when I heard that he had drunk hard, and had often passed whole nights in idle company during the past four or five years. He had at last followed advice, and had given up his smoking and adhered to my restricted allowance of beer. From this time till towards the end of the following September he continued to steadily improve and gain strength, but he then began again to indulge somewhat in drinking. His cough returned, and one morning early in October he began to expectorate blood in small quantities, and this continued until the evening when he suddenly expectorated a large quantity—about half-a-pint. I saw him the next day. He had had some sleep, but was restless in the day-time. He was coughing a little, and some of the sputa were tinged with blood.

Air was less freely admitted into the left lung. His pulse was 90 and soft, and his tongue was nearly clean. From this attack he seemed to recover, and in the following January he was looking pretty well. He said that the cough continued, but the hœmoptysis had not recurred. I did not see him again till the succeeding March. He had never really recovered his appetite or strength since my attendance on him in the previous October. He had, however, committed no great excess except once, but had not abstained from strong drink daily. His stomach was now excessively irritable. There was tenderness at one spot below the right costal cartilages. His tongue was whitish, pulse 82, small and weak, and his motions darkish. He could not sleep without an opiate. He took scarcely any food, and had become very weak. He died early in May, having been gradually sinking for some time, and his mind so enfeebled that he barely recognised his attendants.

A tradesman, aged 53 years, came to me in June 1859. He was a well-made man, with the agitated uneasy manner of an habitual drinker. He complained of cough, to which he had been subject for some years, but which had been more constant and troublesome for the past twelve months. Though not deficient in flesh, he told me that he had lost three stone in weight. His expectoration, he said, was slimy phlegm. There was no urgent or considerable dyspnœa, but there was a râle throughout the upper lobe of the right lung. His pulse was 92; there were ulcers on his tongue; and there was some soreness of the throat. His appetite was poor, and he rested badly at night, and perspired much. He confessed to having drunk largely of beer formerly, but for the last month had only had one glass at his dinner. But besides this he had, in the course of the day, a glass of sherry, one of port, and also a little brandy-and-water *thrice.* I ordered him no stimulant except the one glass of bitter beer. A fortnight later his appetite was improved, and the general symptoms were a little better; but he could not sleep well at night, and in the right lung I could still hear the râle on deep inspiration, and the expiratory murmur was as long and loud as inspiratory. He still continued to have much sweating and sleepless nights, but his cough at the beginning of August was rather less troublesome. I did not see him again, but his death was reported to me in March of the following year.

I was consulted by a retired shopkeeper, aged 68 years, in September 1855. He was fat and rather flabby. He complained of a cough with which he had been troubled since the summer of 1854, and which had become more and more disturbing of late. It was accompanied by expectoration of thick phlegm, and sometimes occurred in paroxysms which ended in retching or vomiting. It troubled him particularly during the night and in the morning. There was very little râle, and no sign of organic disease in his lungs. His pulse was 100, and rather strong; the tongue furred at its base; the skin perspiring; and the bowels reported to be regular. There was much irritability of body and mind, and he suffered from it so much at night that he used to get out of bed and walk about. His appetite was rather poor, and he eat only one hearty meal, viz., dinner. He was in the habit of taking a glass of spirits and water at night. Neither he nor his parents had had gout, but in the course of his life he had several times had the gravel, and had passed minute calculi. He improved somewhat under treatment, but I was again called to see him in the following January. He had been worse then for some weeks, and was very weak and confined to his bed. He complained of pain in his head, frequent retching, cough and wheezing. There were sibilous râles throughout both lungs. His pulse was

104, and his tongue red and patched with white. He had been drinking too much gin and water. He had no appetite. I put him on an allowance of only two ounces of gin in the twenty-four hours, but I found that he took double the quantity that I allowed. After ten days his mind was wandering, and his bodily strength was less, though his pulse was very little reduced. The other symptoms,—bronchitis and retching—continued, and his urine had become high-coloured and scanty and contained some albumen. He again improved during the next few days under treatment, but on the last day of January he had a sudden fit while eating. He became pale, his eyes were fixed and he remained unconscious and unable to speak for three or four minutes. On February 8th he had severe pains in his legs, depriving him of rest at night. The skin of the right leg was tender, but nothing abnormal could be *seen*. His mind was wandering. On the 11th he had less pain in his legs, but he was still restless and sleepless at night. He slept frequently during the day. On the 24th his memory was feebler; he had continual slight delirium; and had much restlessness at night. Much of these symptoms was due to his drinking, which I was informed was at the rate of a bottle of brandy a day. He took it diluted with soda-water. On March 6th he was a little better in every respect, the improvement being probably due to a reduction of his allowance of brandy to one-third. His habit of spirit-drinking had come on only in the last few years; he was formerly temperate and religious. He had had religious apprehensions and a tendency to despondency. He began to drink in order to relieve these latter feelings, and he had increased it much during the last illness of his wife, who died shortly before I first saw him. He suffered during the next month with temporary albuminuria. On May 13th I found him delirious. He had definite delusions and was occasionally violent, as in mania. He had again returned to his habits of drinking, and had been taking every week a bottle of brandy, one of rum, and another of wine. I ordered the rum and brandy to be discontinued and two glasses daily of beer to be taken instead of it. He improved again under treatment, and left the neighbourhood about the end of July. The change of scene, I heard, had benefitted him. He had less delusions, but his memory was much enfeebled.

This last case, as nearly all of them do, illustrates my statement that the Alcohol, being carried in the blood to all the organs, is apt to affect them all. Nearly all the cases are complicated. In nearly all of them, not one organ only, but two or three or more are affected.

Of course, also, the taking too much Alcoholic drinks affects injuriously the Brain and the entire Nervous System. This might be anticipated from their immediate effects—the excitement they cause when much is taken, the stupefaction when they are taken in great excess. In fact, the injury to the Nervous System from habitual excess in Alcoholic drinks is the most serious of all the mischiefs caused by them. It is the most serious because attended with more moral and social evils, and is the most striking because disorders of the brain occasion more disturbance in a man's relation with society.

To the diseased condition of the Nervous System, which is brought on by habitual excess in alcoholic drinks, the name of Alcoholism has been applied. In Reynold's *System of Medicine,* among the group of Articles on the various diseases of the Nervous System, is one on Alcoholism.[1] The article is by the late Dr. Anstie, and is ably written, but under the name of Alcoholism is described only the effects of excess of

---

[1] *A System of Medicine,* Edited by J. Russell Reynolds, M.D., F.R.S. Vol. II. 1872.

Alcohol on the Nervous System. I think this name has not been wisely given. It is taken from the cause, but is limited to one only of the effects of the cause. It is a mistake to limit such a term as Alcoholism to an affection of the Nervous System alone. Such a term cannot be appropriately limited to the effects produced by habitual alcoholic excess on one system alone. It may be suitable as a name for that condition of the entire body, or to the condition, whatever it may be, which is brought on by such excess; but to apply it to the Nervous System alone is a misnomer, and is misleading. It is certain that nearly, or quite, every part of the body suffers from alcoholic excess, and that in some cases we find the stomach or liver as seriously affected as the nervous system, or even more so. It would be as reasonable to limit the term Alcoholism to such diseases of the abdominal organs as to confine it to the diseases of the nervous system.

The liability of the Nervous System to suffer more than other organs is probably in any particular case due mainly to the constitution of the individual. If a man's nervous system be constitutionally excitable, as inherited from his progenitors, or brought to this state by mental or physical trials, that system may be the one to suffer most from habitual excess in strong drink. But if a man's nervous system be originally sound and phlegmatic, the effects of his excess may be felt first and most on his stomach or liver or kidneys, or may be manifested in gout, and may even proceed to a fatal result with very little, if any, of the well-known disorders of the nervous system. I have certainly met with such cases.

A very large dose of Alcohol may kill a man rapidly by its immediate action on the Nervous System. This has happened when, for a wager or in utter recklessness, a man has drunk off a large quantity of spirits. Complete insensibility and deep coma ensue, the skin becomes cool, the temperature falls many degrees, it may be as many as 15° F., the respiration gradually comes to an end (as if from paralysis of the medulla oblongata), and soon after the heart also ceases to beat. Such cases of rapid death are not uncommon.

The ordinary case is that habitual excess in alcoholic drinks gradually brings about some change in the brain and other nervous tissues, which unfits them for their normal functions; a state of chronic disease, which at some time subsequently bursts out into the more active form of Delirium Tremens, or, it may be, Mania. The chronic diseased condition of the nervous system is manifested by various symptoms; in its early stage by a tendency to fidgetting in the limbs and tremulousness of the hands, and restlessness of the mind. After a time the mental restlessness interferes with the sleep at night, or the sleep is unrefreshing, and the tremulousness of the hands is most marked in the morning before nourishment of some kind has been taken. Then, after a while, as matters grow worse, through persistence in the alcoholic excess, there will be buzzing in the ears and muscæ volitantes will become troublesome, or there will even be optical hallucinations. Then the man will become uncertain of purpose and unable to settle to his occupation, and then may follow actual mental delusions. Or vertigo may be one of the earlier symptoms, and an epileptoid attack one of the later. Or anæsthesia in some form, as impairment of sight, with or without colour-blindness.

All these symptoms may come on gradually, and more or less of them indicate a condition of chronic alcoholism, on which may, and in many cases do, supervene acute attacks of Delirium Tremens or Insanity. Delirium Tremens is by far the most common form in which the nervous symptoms of alcoholism attain a climax. The more immediate cause may be something that lowers the strength. It is commonly ushered in by long continued sleeplessness, and lasts, as you know, for some few days, the delirium having the character of a *busy* delirium, the patient's mind being incessantly restless about what may happen to be his ordinary business pursuits; and it has another character—in being accompanied by hallucinations, mostly of insects or snakes, or toads or rats or dogs, or what not, which appear to him to be running about his room or over his bed. Sometimes these may occur after merely a *bout* of drinking. The tremors also are important for ensuring diagnosis. This is the ordinary form of cerebral disease caused by habitual excess in Alcoholic drinks.

But it is not the only result in the form of cerebral disease. Another result is Insanity. And as the relation of this to drink is less well known, and has much in it that is of interest and importance, I will say something more about it.

Delirium Tremens itself is very like, if not really, a short attack of Mania, and when true Insanity is the result of excess in alcoholic drinks, its more ordinary form is that of Acute Mania. I have seen a case in a man persisting in more chronic form than delirium tremens, and with the delusion that other persons wished to kill him. But it may occur in other forms as Melancholia or Dementia.

In estimating the causative influence of Alcohol in producing Insanity we may notice that in some of the cases where Alcohol has been plainly the cause of the outbreak, one of the first symptoms of an attack of Mania may be a craving for drink, and this drink may be, in the first instance, rather an effect than a cause. Again, in other cases, the previous condition of the patient from hereditary tendency, or brain disease has been such, that the alcohol only lights up a train of mischief already laid, which might have been exploded by any other cause, such as a fright or fit of passion or a blow on the head. In this case the drink is only one of two co-operating causes. And again, in many or most cases the habit of drinking is necessarily associated with troubles and trials, moral and physical, and these domestic or personal troubles, themselves the consequences of inebriety, may be concurrent causes in producing the Insanity. In these last cases the Insanity may with good reason be attributed to habitual intemperance, though it is not the effect of it alone. The influence of alcoholic drinks in producing Insanity is, therefore, not so easily estimated as might at first sight be supposed. Its influence is doubtless exaggerated by those who set down at 50 or more per cent. the proportion of cases of Insanity caused by drink. The Reports from different Lunatic Asylums vary much; as much as from 2 to 30 per cent. The best approximation to the truth seems to me derivable from the admissions during the year into the Asylum for the West Riding of York.[1] Out of 511 cases admitted, the proportion of cases in which the cause, in Dr. Major's judgment, was alcoholic excess, was 17·79 per cent.; of which 11·35 per cent. resulted from the direct action of alcohol; 1·56 per cent. were complicated by hereditary tendency to insanity; 2·93 per cent in which alcoholic excess had been combined with other adverse physical conditions; and 1·95 per cent. in which alcoholic excess had been combined with mental causes.

There is something very sad in the fact that this constitutional weakness or undue excitability of the nervous system is in many cases a consequence of alcoholic excess in a man's progenitors. It is possible that a man may inherit a proclivity to the vice. It is certain that if he inherit a weak excitable nervous system, he inherits that which insures the punishment of the vice. More than this, I am sure that the offspring of drunkards are more liable to Insanity in its ordinary forms than are the children of temperate parents.

---

[1] *British Medical Journal,* On some relations between Intemperance and Insanity, by J. C. Bucknill, M.D., F.R.S., March 3, 1877, p. 254.

You may have observed that in speaking of the relations of Alcoholism to Insanity, I have not used the word Dipsomania. The reason is that I have been speaking of excessive drinking as a cause of Insanity. But Dipsomania is the name given to a form of Insanity, which is a cause of excessive drinking, a cause of an irresistible propensity to habitual excess in strong drinks. It is, therefore, one of the class of moral Insanities of the monomania class, such as Kleptomania and Homicidal Monomania. Cases that can properly be called Dipsomania are far less frequent than is commonly supposed. The term may no doubt be reasonably applied to cases in which the propensity arises as an immediate consequence of organic disease or injury to the brain. But such cases are *very* rare.

And there is some reason for regarding habits of excessive drinking as a form of Insanity in the fact that in some cases—sad cases they are—the propensity seems to have been inherited. But this is not the sense in which the term Insanity is commonly used or is regarded by the Law. When intemperance is really a symptom of Insanity it will be found to be associated with other and unmistakeable signs of mental derangement. I have never heard of any two medical practitioners giving the requisite certificates for consigning a man to a Lunatic Asylum *solely* on the ground of his irresistible propensity for excessive drinking.

In truth, if you enquire closely into the history of habitual drunkards you will find that the drinking, in the vast majority, had its origin not in Insanity but in some other cause, such as vicious example or mental trial; and the inability to resist the propensity is nothing more than the inability to resist an established habit. Their inability to abstain from drink is akin to the inability of an habitual gambler to resist the temptation of a gaming table, or the inability of the opium-eater or tobacco-smoker to give up Opium or Tobacco.

Delirium Tremens and Insanity are not the only disastrous effects on the Nervous System of excess in alcoholic drinks. Another is Epilepsy. I have already mentioned that an Epileptoid Fit is an occasional symptom in chronic alcoholism, and it is not uncommon for Delirium Tremens to be ushered in with one or two fits of Epileptoid convulsions. But, more than this, Epilepsy in its regular form, with frequently recurring seizures, may be the direct result of free indulgence in alcoholic drinks. Not only have I met with many cases in which the history pointed to this as a cause of the Epilepsy, but I have met with some in which the connexion between the drink and the Epilepsy was proved —was put beyond doubt—by the relief of the Epilepsy on discontinuance of the stimulants, and the relapses into Epilepsy when the drink was resumed.

Affections of the Spinal Cord and Nerves are also among the serious effects of excess in Alcoholic drinks. They show themselves in derangement of both motor power and sensibility, more frequently the latter. The patient may walk with difficulty, as if partially paraplegic, or he may be wholly unable to walk, because an increased reflex excitability causes his legs to be drawn up involuntarily as soon as his feet touch the ground. The affection of sensibility shows itself occasionally in darting pains, and, in almost all cases, in excessive tenderness and hyperæsthesia of the feet and legs. The soles of the feet are in many cases so tender that the patient cannot bear his weight upon them, or even bear a light touch upon them while lying in bed. It is very important, in such cases, to recognise their cause; otherwise treatment can be of no avail. In some of these cases the tenderness is not confined to the feet and legs, the hands also are hyperæsthetic. In such cases there is peripheral neuritis.

Here is the case of the wife of a small tradesman, who consulted me at the end of October 1859. She was thirty-two years of age. Her complaint was that she vomited all her meals. This was caused by her habitual intemperance with brandy. I found her weak and confined to bed, and her bowels were costive. I prescribed for her and procured black offensive evacuations, and the vomiting ceased, and, notwithstanding pork-pie and pickled cabbage for supper, and great carelessness in regard to medicine, she remained convalescent on Nov. 8th. On November 13th I was again summoned. The bowels were again costive and had not been moved for three days. There had been vomiting of all food for the same period. I prescribed again for her, and the next day she kept down some beef-tea, but the vomiting continued. There was no epigastric tenderness, but her abdomen was a little full. The sickness ceased with regulation of the bowels and diet; but on the 20th November her legs were paralysed. On enquiry, I found that she had had some difficulty in walking, and particularly in ascending steps, as long as two months before. This had increased, and since she took to her bed she had had much pain in the legs, and such tenderness that she could not bear to have them handled when lifted by an attendant. There was, on November 20th, no tenderness and little pain; the muscles of the legs were wasted. They were sensible to contact, and to pain on pinching, but she could move them very little. She could move them a few inches laterally, and could move the toes, but no more. She could not draw up her knees in bed. Her pulse was quick. There was tenderness on pressure at the sacrum, but not in any higher part of the spine. On the 23rd she could draw up her knees in bed, and move her legs much more freely. She felt better in every respect, and her appetite was improved. During the next month she did not improve. The sickness was not unfrequent. She drank strong brandy-and-water very freely, and was careless in her diet. On January 5th she was in a deplorable state, taking nothing whatever except brandy-and-water, and refusing even that except it were strong, and then generally vomiting it. Her pulse was very frequent and feeble, and she gradually sank and died a few days later.

The following is a case of shifting neuralgia and anæsthesia of the legs; neuralgia of the arms; subsequent incomplete paralysis of all limbs; and tonic spasms of the feet, due to intemperance in drink. It was the case of a lady, aged 37 years, and I first saw her about the middle of September 1860. Her illness had begun about six weeks, and was attributed by her to cold. The chief symptoms had been pains in different parts, particularly in the legs. These had become very severe and distressing, mostly at night. She called them cramps, but I could not perceive any spasms of the muscles during the pains. They were sudden in their onset, and changed their seat frequently and quickly from one leg to the other. Once the left arm had been affected. They were referred rather to the front of the thighs, the calves and the fore part of the feet. They were mitigated or temporarily relieved by placing her naked feet on the cold hearth. She walked with much difficulty. Her legs were considerably œdematous, the swelling being elastic excepting the calves, where it pitted on pressure. The œdema came on only a few days before. There was no abnormal cardiac murmur, nor perceptible induration of femoral veins. There was pain in the loins and sacrum on a jarring blow; some pain and tenderness in the left iliac region; and there had been general pain and tenderness of the abdomen, but this had been relieved. She was taking porter, port wine and brandy-and-water, it was said, to still the pains. She was taking far too much of them. The legs were benumbed. Their sensibility to contact was much impaired, particularly after paroxysms of the pains. Two days later I was confirmed in my opinion that her habits had been intemperate. For some time she had been in the habit of drinking much and at all hours, even brandy-and-water in the morning. At my desire she reduced her allowance to a pint of stout and two glasses of port. She did not completely recover from this illness until the following summer, viz: that of 1861. She remained well from that time until six weeks before I was again consulted about her, in September 1862. She referred her relapse to a chill caught on wet grass in an evening while wearing thin boots. There was, however, good reason to attribute it to intemperance in drink. Whatever were the cause, the disease had proceeded further than on the former occasion. Not only did she suffer severe neuralgia both in legs and arms, particularly at night, but all her limbs were partially paralysed, and she was incapable either of assuming or maintaining the sitting posture. Her left hand dropped from the wrist and was the feebler of the two; her feet were turned in slightly with constant tonic spasm. There seemed to be much tenderness in the upper regions of the spine manifested on percussion. She had been keeping her bed and had had bed-sores, but they were then healing. Under treatment she again recovered.

And here is another case in which, besides the ordinary symptoms of habitual intemperance, there was much impairment of memory, and acute pain and tenderness of the soles of the feet. It was the case of a lady, aged about 42 years, embonpoint, and with the general appearance of health. But her liver was enlarged and tender; her abdomen very full and flatulent; pulse 100; and she had head symptoms. She complained of frequent uneasiness about the head, pain and heat at the vertex and some giddiness. She slept scarcely at all at night. Her memory was extremely impaired, so that she forgot any thing she had heard, or spoken or done a few minutes before, and (perhaps through this defect of memory) she spoke of doing things and having recently done them altogether at variance with the fact. A short time before she had a slight threatening of jaundice. The probable cause of her illness was habitual excess in strong drink, to which she had been addicted for many years. She complained also of pain and tenderness of the soles of her feet, and screamed out when she placed them on the floor in getting out of bed.

This acute tenderness of the feet will commonly enable you to distinguish alcoholic cases from paraplegic affections due to other causes.

Another case will show how variously and widely the Nervous System may be affected in Alcoholism.

The wife of a farmer, aged about 38 years, had a variety of nervous symptoms, the effects of intemperance in spirit-drinking. The only time I saw her, she had a good colour, was well nourished, and was healthy in appearance, except that she seemed excitable and unduly agitated by slight causes. She had a variety of complaints. She was subject to a pain in the chest and throat, which often passed into a regular hysterical fit. She had throbbing pain at the crown of her head and heat there, which was relieved by an evaporating lotion. She had palpitation of the heart on any exertion or emotion, but there were no physical signs of disease of that organ, though she said that she required to lie at night with three pillows under her chest. She had pain and tenderness of the whole dorsal spine, the tenderness being manifested on moderate pressure, and this was attributed to a fall on her back in going down stairs twenty years before. At that time she was kept in a recumbent position for six months by the direction of a surgeon, and ever since had been troubled more or less with the pain. She had, when I saw her, tingling down her right arm, sometimes also in both legs, sometimes a similar tingling or thrill through her whole body. She said that she was often completely exhausted by her exertions and obliged to go to bed. She had had four children, of whom the youngest was two years old, and since his birth her catamenia had been not always regular, and were generally profuse. At such times as they occurred her symptoms were aggravated, and particularly one of them which was most urgent, viz. vomiting. This occurred at various times, often immediately after she had eaten. Her appetite was bad, and her tongue white and furred. Her bowels were moved sometimes eight or ten times in the day; sometimes immediately after taking, or beginning to take, food. Her manner was agitated, like that I have sometimes seen in men of active minds who drink habitually more than is good for them. I was subsequently informed that she drank hard and habitually of brandy—even to drunkenness.

Well, all the evils and miseries I have mentioned, all these diseases tending to death, are the result of habitual excess in alcoholic drinks. And I have scarcely exhausted the catalogue of the physical evils; and great as they are, they are trifling compared to the moral evils and mental degradation that too often accompany them. I might illustrate every statement I have made with sad examples out of my own recollections. And the misery is not confined to the drinker himself. It is too apt to be shared and inherited by his children, in more ways than one—not only in damaged fortunes, but also in a constitution prone to like excess or prone to insanity.

And yet how few habitual drinkers can be induced to forego the habit when once formed! All physicians will tell you that among cases difficult to cure, these rank among the *most* difficult.

We are bound then, in considering preventive medicine, to look back a little further, and enquire what are the causes of these habits of excess of drink ?

In some the tendency is inherited. From intemperate parents or ancestors a nervous constitution is inherited, which mentally renders a man prone to slip readily into such habits, and weakens his power of resisting the temptation; and physically also, such a man may feel that stimulants give him for the time a sense of ease and relief from the exhaustion to which persons of nervous temperament are peculiarly liable; just as a glass of brandy will actually steady the hand and the purpose of an habitual tippler. Among the evidence given before Dalrymple's Committee of the House of Commons are many medical opinions, that a faulty nervous organisation inherited from intemperate ancestors is a frequent and powerful cause in developing drunken habits.

Of the causes that bring about these habits in persons who have not the excuse of hereditary tendency, perhaps the strongest is the obvious one of direct temptation perpetually recurring. Men employed in breweries or distilleries, butlers, public-house keepers, and small inn-keepers have the liquor always at hand, are always under the temptation. College servants were formerly much exposed to the temptation, for in my remembrance many of their small fees or perquisites were allowances in beer. Travellers for wine and spirit-merchants find that it helps their trade to set an example to their customers; and cattle-dealers and pig-jobbers and even horse-dealers are under temptation to be continually tippling, for by an absurd usage no bargain is concluded except over a glass. Mental trials, grief at the loss of a wife or only child, often lead to it; so also the want of a happy home, or the habitual absence of a husband in the evenings. Some men have not the fortitude to bear sorrow or anxiety; they drown their griefs and cares in wine or spirits. Misery of all kinds may be at once a cause and excuse for it. The mere strain of excessive business, work, anxieties or losses in business, will sometimes induce the fatal habit. A man begins by taking a glass now and then "to keep him up to his work," "a pick-me-up," in the slang of the day. Some women acquire the habit through taking brandy or eau-de-cologne to relieve neuralgia or hysterical distress, or their sufferings in dysmenorrhœa. And to the long list of those who fall into these habits, so fatal to body and to mind, must in truth be included some of those whose genial pleasantry contributes so much to the enjoyment of society. But they are happily less exposed to temptation in modern times, at least in the upper classes of society, since it has been discovered that excessive wine-drinking is not essential to the pleasures of social intercourse. Getting drunk at a dinner-party, which would now be regarded as an outrageous breach of good manners, was one of the commonest occurrences in the last century.

A consideration of the various causes will put us on our guard, and enable us to give timely warning and advice; will remind us not to be satisfied with merely endeavouring to remedy the evil consequences, but to prevent by timely warning the habits that lead to them.

The persons whose habit of drinking too much thus brings misery upon themselves are not all of them drunkards. Some of them never get drunk. Their state of alcoholism is brought on by the undue frequency with which they take to stimulants. Each dose may be small, and yet the total quantity large. The modern fashion of a glass of Sherry to relieve all slight fatigues of body or mind has not unfrequently formed a habit which has led to alcoholism and all its evils. It is when these frequent glasses are taken on an empty stomach that they are particularly injurious, and they are more so when the person's inclination or occupation keeps him or her much confined to the house. It is for these reasons that women with this habit of the frequent glass of Sherry (which after a time becomes perhaps Brandy) suffer so soon. And this is probably the reason, besides the temptation to which they are exposed, that the keepers of inns and public-houses so frequently fall into alcoholism. You rarely, very rarely, see public-house keepers or inn-keepers drunk, but they are continually taking a little of stimulants, and they do not take the exercise in the open air, which by promoting increased oxidation would obviate some of the ill effects of the alcohol in their blood. You may remember the description of Crabbe of the "slow sudden death" of the Landlord of the public-house.

These are the causes—drinking, and want of exercise, which must explain the extraordinarily high death-rate of Licensed Victuallers.

Here is a table taken from the 14th Annual Report of the Registrar General.

Deaths per annum of persons between the ages of 45 and 55 years.

Farmers ...	11·99 per 1000	Labourers ...	17·30 per 1000
Shoemakers ...	15·03 ,, ,,	Miners ...	20·15 ,, ,,
Weavers ...	15·37 ,, ,,	Bakers ...	21·21 ,, ,,
Grocers ...	15·79 ,, ,,	Butchers ...	23·10 ,, ,,
Blacksmiths ...	16·51 ,, ,,	Innkeepers and Licensed Victuallers ...	28·34 ,, ,,
Carpenters ...	16·67 ,, ,,		
Tailors ...	16·74 ,, ,,		

It shows the number of deaths per annum out of 1000 persons of twelve different occupations, between the ages of 45 and 55, who on an average die before reaching the age of 55.

Observe the high death-rate of the Innkeepers and Licensed Victuallers. This is a good test of the effect of their occupation on their health; for 45 is about the age at which an unhealthy occupation or habit may begin to tell upon a man.

LECTURE IV.

MENTAL CAUSES OF BODILY DISEASE.

MENTAL CAUSES OF BODILY DISEASE.

Affections of the mind may cause disease. The general uninstructed public have no doubt of this. They speak of a person "dying of a broken heart"; and some of those who use the expression scarcely mean it figuratively. But though in the vast majority of such cases there is nothing like a rupture of the heart, it is certain that mental affections are not unfrequently very real causes of disease.

Of the various mental states, the Emotions are those which are beyond all comparison the most plainly and most frequently causes of disease. In many cases the effect follows so immediately on the cause as to leave no room for doubting their connexion. The simplest example is an ordinary hysterical fit following immediately on the communication of bad news to a nervous woman. But the effects may be infinitely more serious even in men. You may recall a striking example in connexion with a chief event in the life of the famous Lord Clive,

—his famous treaty with Omichund, the Minister of Surajah Dowlah. Sudden astonishment and intense disappointment *instantly* caused permanent Melancholia in the Minister.

As to how the Emotions act in producing disease, I shall say but little, except that their pathological effects appear to be no more than intense or exaggerated degrees of their physiological effects. The mode of causation is therefore a Physiological, rather than a Medical question. And Physiologists are not even agreed as to the exact seat of the emotions. No one now believes that their seat is in the Sympathetic nerves and ganglia. Their seat is pretty certainly in the Encephalon; but in what part of it, or whether in one part only, or in many, physiologists have differed. Some have placed their seat in the Optic Thalamus, others in the Medulla Oblongata, or in the superior and posterior part of the Mesocephalon; and, if indeed they have any such limited localisation, there is something to be said in favour of the parts I have mentioned, inasmuch as these parts are in more or less immediate connexion below with the nuclei of the nerves of Special Senses, and above with the cerebral cortex; and we know that the exciting causes of our emotions are commonly what we see with our eyes or hear with our ears, *i.e.* they are impressions which produce their first effects on the nuclei of the optic or auditory nerves; or they are thoughts which are (we have reason to believe) associated with physical changes in the cerebral cortex.

The Emotions are many and various; and their influences on the body are of course many and various. They are so physiologically, in their healthy manifestations and ordinary effects. They are so pathologically; the disorders and diseases caused by them are many and various. This is best shown by examples. They are the best teachers.

A young lady, a patient of mine, had been frightened by a fictitious ghost, the foolish trick of one of her young companions dressed up in a sheet. The terror into which she was thrown caused *mania* which lasted six weeks, and left her in a wretched state of health, for which I was consulted.

Fright is a potent cause of mental disease; the Emotion may be a very strong one; and its morbific effects may be persistent and even permament.[1] So also grief and anxiety may cause permament Melancholia;[2] and here is a case in which disappointment and mortification caused a sudden attack of Mania.

---

[1] James Russell, M.D., *British Medical Journal*, Nov. 3rd, 1860. Esquirol, *Des Maladies Mentales*, 1838, Vol. 1., p. 408.

A young man at Cambridge had been reading steadily for a year. At the end of that time he went into the ordinary examination for the B.A. degree. His tutors had no misgiving as to his passing it; but in the examination he said he "could not think," and when the list appeared his name was not in it. In fact he had failed in *four* of the subjects. On reading the list in the Senate-house, he staggered backwards, but recovered so as to congratulate friends who had been more fortunate than himself, and then walked to his rooms. He had been very anxious about the result, perhaps because some of his cousins had highly distinguished themselves in the University; but he was a rich man, and his degree was of very little value to him pecuniarily. He had said, the day before, that if he were plucked he should go mad. On reaching his room he became much excited, and ultimately fell into convulsions or struggles, which were regarded as Epileptic, but as far as I could judge from description, could not have been such. These struggles were instantly restrained by force. They continued recurring for five hours until I saw him. They were then most violent, the force of 7 or 8 men being required to hold him down on his bed. They seemed to me voluntary. I had him released from the restraints and allowed him to lie at liberty on his bed. After this he was quieter, though occasionally throwing about his arms and legs. It since became probable that he was under the delusion that those who were holding him down intended murder and robbery. He was naturally good-tempered, and had moderate abilities. He had a good strong figure and well-made head. His mother and father were both dead; the former had been strongly epileptic, the latter was very excitable. He was speedily cured of his attack by morphia and mild aperients. He had had, six months previously, a single obscure attack while sitting at table after a dinner party. His head suddenly dropped, he became insensible, and afterwards seemed delirious or hysterical for a couple of hours. Under all these circumstances I advised him not to persevere to take his degree, and some months afterwards he still remained quite well.

---

[2] Esquirol, Ibid. Vol 1. page 409.

Such illustrations of Mental Disease caused by emotions might be multiplied without end. Observe how, in some of these cases, though the causes of the Emotion were only transient, its effects were disastrously permanent.

Not less frequent among the morbid effects of emotions, are other affections of the nervous system, particularly those which manifest themselves in convulsions, as Hysteria and Epilepsy. A single fit of hysterical agitation is so familiar as an immediate effect of emotion in women that examples are unnecessary. But you must be prepared to recognise it in men as in women, though of much rarer occurrence.[1]

Unhappily the morbid effects are not in all cases limited to a single hysterical fit. The hysterical condition may be more or less persistent, and the paroxysms recur again and again at intervals. This may happen even in cases in which the cause was transient. I have known fits of hysterical convulsion recurring at intervals of some days in a young girl after fright and ill-treatment by some boys, and have seen violent epileptoid-hysteria occurring in a soldier's wife after discovering that she had been deserted by her husband.

---

[1] Hystero-Epilepsy in men, caused by fright; Charcot, *Clinical Lectures on Diseases of the Nervous System*, Vol III. N. Syd. Soc. 1889, pp. 226 et seq.

Dr. Wilks' case of a Merchant ruined by speculation, *Medical Times and Gazette*, March 13, 1869.

We need not *wonder* at emotions causing convulsions. These pathological effects are only exaggerations of what occurs physiologically. Involuntary movements are a not unfrequent accompaniment of normal emotions, such as joy and grief. But it is remarkable, and a fact to be remembered, that the pathological effects are in some cases not transient, as the first emotion may have been, but persistent, leaving the patient in a state of continuous exaltation of irritability of body or mind, manifesting itself in a persistence or recurrence of its first effects.[1]

And the exciting cause may be somewhat different from those of which I have given illustrations. It may be not a sudden and violent emotion, but a long-continued anxiety, vexation, sorrow, or other mental strain. Such cases as these are probably the more numerous, though less readily recognised, because less striking than those in which the connexion between the cause and effects are so obvious.

Fright is also a very frequent cause of Chorea.[2]

---

[1] Dr. A. Mitchell, *British Medical Journal*, March 19, 1870.

[2] *Lectures on Clinical Medicine*, A. Trousseau, Vol. I. N. Syd. Soc. 1868, pp. 397—8.

Dr. O. Sturges has noted instances of Chorea in School-children arising from puzzling over work which they did not know how to do, and consequent dread of punishment.[1]

Violent hiccup has been known to have been excited by fright, in a girl aged twenty-one years, during the Revolution at Cracow, and to have been persistent in her case for three years.[2]

Paralysis agitans has been produced by terror, as in the case of a man aged 60 years, at the bombardment of Vienna in 1848. This case proved fatal ultimately.[3]

Pseudo-paralysis, or morbid inability, may be caused by Imagination with Emotion, as in a case of a man lying a-bed for years under the imagined influence of an "evil eye." Here the emotion has had its origin or its persistence, not in ordinary mental shock or real troubles, but in Imagination.

Again, in Hysterical Hemianæsthesia, the explanation is obscure. The insensibility may perhaps be due to this—that when the mind is wholly engrossed by an emotion, a part of the body not concerned in the emotion, may be in a state like that of a part from which attention has been distracted.

---

[1] *British Medical Journal,* Aug. 15, 1891.

[2] M. H. Romberg, *A Manual of the Nervous Diseases of Man,* Vol. I. Syd. Soc. 1853, p. 342.

[3] Trousseau, Vol. I, p. 446.

An example of this may be found in an account of the Convulsionaires de S. Medard.[1] In 1727 died the deacon Pâris, a very devout and ascetic Jansenist. The controversy of the Jansenists and Jesuits had been going on then for thirteen years. Pâris was buried in the Church-yard of S. Medard, Paris. Other devout Jansenists much frequented his monument, and after a time it was reported that miraculous cures occurred among sick persons resorting to it. So more and more went to it. In 1731 a woman resting on the monument was seized with violent convulsions. This was speedily followed by similar cases, until the occurrence of convulsions became general, numbers being convulsed at the same time in and about the Church-yard. The convulsions seemed to have been of the kind which have, by Charcot, been called "Hystero-Epileptic." They were liable to recur at other times and in other places, besides those of nearness to the monument of Pâris. They occurred also in many persons who were not

---

[1] Calmeil, *de la Folie*, 1845, Tome II. p. 386.

Jansenists, nor devout. Mostly, but not solely, they occurred in girls and women. There were many other nervous symptoms, suggestive in some cases of actual mental derangement, (religious mania), but in a *marked degree there was ancæsthesia,* the patients bearing and wishing for violent blows on the abdomen. This may have been to relieve hysterical flatulency.

Here again are instances of morbid sensations illustrative of disorders of sensibility.

A lady, aged 55 years, consulted me on a single occasion for persistent tinnitus, the effect of temporary mental emotion. She had been much tired in nursing sick relatives by night as well as by day. More than a year before she had a severe shock in watching her brother, who had an attack of convulsions for 24 hours, and lay insensible for 48 hours, but recovered. Since that shock she had been troubled with a constant murmur in her ears. It had never ceased, and was worse in the evening and night, and became worse when she lay down. It was not perceptibly influenced by her taking a glass of wine. Her temperament was somewhat nervous, and her complexion palish. Her bowels were regular in general. Sometimes she had what she described as "red sand" in her urine. She had taken much calomel without benefit. The tinnitus was at first accompanied by deafness, but her hearing was good when I saw her. Various remedies had been tried in vain for her cure.

[1] "A young farmer in Warwickshire finding his hedges broken, and the sticks carried away during a frosty season, determined to watch for the thief. He lay many cold hours under a hay stack, and at length an old woman, like a witch in a play, approached, and began to pull up the hedge. He waited till she had tied up her bottle of sticks and was carrying them off, that he might convict her of the theft, and then springing from his concealment he seized his prey with violent threats. After some altercation, in which her load was left upon the ground, she kneeled upon her bottle of sticks, and raising her arms to Heaven beneath the bright moon, then at the full, spoke to the farmer already shivering with cold, 'Heaven grant that thou never mayst know again the blessing to be warm.' He complained of cold all the next day, and wore an upper coat, and in a few days another, and in a fortnight took to his bed, always saying nothing made him warm; he

---

[1] *Zoonomia*, by Erasmus Darwin, M.D., F.R.S., Vol. II. p. 359, 1796.

covered himself with very many blankets, and had a sieve over his face as he lay, and from this one insane idea he kept his bed above twenty years for fear of the cold air; till at length he died." This again is an example of *Imagination* with Emotion.

Other more various and less definite nervous disorders are seen in the following cases which have come under my notice.

An opulent farmer aged 65 years, of a very nervous temperament and excitable manner, suffered an attack of pain in his head, together with impairment of vision and wandering of mind, excited by strong emotion in a quarrel. One of his brothers was a lunatic and another had died of apoplexy. The patient was peculiar in being weak, in his bowels being habitually lax, and in taking three or four glasses of port wine daily. For years also he had been troubled with dysphagia for solid food, and so lived chiefly on liquids. He referred the obstruction in deglutition to the region of the larynx, and I was told that he would sometimes bring up into his mouth a portion of meat which had been eaten, not at the last, but at the last but one or two meals. On examination of his throat by pressing down his tongue a sudden and strong spasm ensued, which raised a quantity of frothy mucus into the back of the pharynx. He had, three days before I saw him, been to a neighbouring town, on disagreeable business connected with the will of his late brother, and had a trying interview with his widow, and was violently affected in the dispute or quarrel which ensued. His eyesight became affected, so that he was partially blind, and on reaching home had severe headache, and his mind wandered. At night he got no sleep. These symptoms had continued, but had gradually somewhat abated. He had been treated with moderate purgation, blisters to his head, and some wine. The latter seemed to have been beneficial. He gradually obtained a little more sleep at nights, and eventually recovered.

A young married lady, about 22 years of age, had been delivered of her second child (a boy) about eleven weeks before I saw her. Her first child had been dead about twelve months. She suffered from phlegmasia dolens after her second confinement, and was just becoming convalescent when, two days before I saw her, she was shocked by the news of her husband's death. He was drowned when on duty in a distant colony. Their married life had been one of great happiness, and she looked up to her husband with the highest admiration. She had been for some time with her husband in the colony, but they both had come back to England a few months before his death, and then he returned alone to his post. It was broken to her that her husband was dead, in the gentlest manner, but the effect was overpowering. This was not anticipated by her friends, as she was usually (when well) apathetic and always composed. At the news, however, she had a succession of fainting fits and attacks of general rigidity, and she continued in an alarmingly depressed state both of body and mind. She never spoke except when addressed, and then she replied in monosyllables. She asked not for food, nor did she feed herself. She swallowed beef tea and milk when put into her mouth, but seemed unable to swallow solids. She slept much, and looked pale and pinched. She took but little or no notice of her child, though she had plenty of milk and the child sucked freely and was a fine lively boy. The morning of the day I saw her the pupils of her eyes were seen to be of unequal size, and the pulse was almost fluttering. Three days later she had, under treatment, improved a little in all respects: she talked a *little* spontaneously; expressed a wish to live for the sake of her boy; gave longer and more explicit answers; and had on the night of the first day executed her will, and shown deliberation and consciousness of what she was doing. The pulse too had improved, and there was no difference perceptible in the two eyes. She still, however, refused solid food that required mastication. In the meantime she had had pain and tingling in the right arm and leg (the leg was the one which was affected with phlegmasia dolens) and the right hand had been partially numb, and the thumb (it was said) stiff. On the night of the third day of improvement the pain in the arm was suddenly exchanged for palpitation of the heart. The drowsiness had passed away and she had become somewhat intolerant of noises. On the eighth day after her shock she seemed to be pretty well, though still keeping her bed. She was then trying to bear her loss stoically, and succeeded very well. She shed no tears, and was reserved and silent.

Apoplexy and Paralysis from actual cerebral hæmorrhage, may be occasioned by emotion. Emotions may excite a more forcible action of the heart. We feel, under certain emotions, a rush of blood to the head, a throbbing and tinnitus aurium. One of the cerebral arteries may give way under this extra strain, especially if weakened by previous disease or senile decay.

For instance, here is the case of a woman aged 48 years, the wife of a fairly prosperous tradesman. She had taken beer habitually, and had been subject to chronic eczema of the legs, which, however, of late had become less troublesome, having in great degree subsided. Her general aspect had been that of full health, figure *embonpoint.* About two years before, she found on rising one morning that she had lost power in her left arm and leg; the paralysis not being complete. She recovered most of the power gradually, but now, at the time I saw her, the power of her *right* arm became impaired (without loss of consciousness), and simultaneously the *left* leg lost some of the power which it had regained. For these I saw her in consultation, and predicted that she would one day die suddenly. Within the fortnight before I saw her she had been troubled with headache, and her mind had now and then wandered a little, but she had been up and dressed and looking well. A month after my seeing her, her sister came to visit her from a distance and without notice. She was pleased to see her, but in a minute or two she fell back in her chair and died. On *post* *mortem* examination (less than twenty-four hours after death) we found a great extravasation of blood in the brain. It covered the pons and upper part of the medulla oblongata with a thick layer, and *filled* all the ventricles, including the fourth. The arteries at the base of the brain were strikingly atheromatous, and at the upper end of the basilar artery the vessel was dilated into an aneurysm somewhat bigger than a large grey pea. In this aneurysm was an opening the size of large pin's head, which seemed to have been the source of the hæmorrhage.

And here is another case of hemiplegia, following quickly on agitation from a sudden alarm, in a woman nearly 50 years of age.

One evening her daughter tumbled down stairs. This much alarmed her, and she went to her bedroom and said she felt very strangely. Soon afterwards her left arm became insensible, and after a time she became completely hemiplegic on the left side, losing both sensibility and motor power. So she had remained during two days before I saw her, but she had not, I was told, lost consciousness or been comatose. Her mind had wandered a little, and she had failed to recognise a favourite daughter, but she knew the others who were attending upon her, and answered questions sensibly. Her pulse was about 74; the heart's impulse not strong; the tongue was a little furred; and she had frequent heavy sleeps. Four leeches were applied to her head, and she had three grains of calomel and a senna draught, the result of which was a dark stool. She complained of severe pain at the crown of her head. The pupils were a little below medium size. She was very bulky and had a red face, but had been a moderate eater. She had been subject to trouble in her head, which had generally been relieved by a few leeches. She had also been subject to rheumatism, but not rheumatic fever. On the second day after I saw her, sloughs formed on the paralytic leg and foot, and there was general feebleness. The latter gradually increased, and the patient died twelve weeks after the commencement of her illness.

Thus far we have considered the morbific effects of Emotion as manifested only in the nervous system. But its effects are not limited to the nervous system. It may disturb the functions of most of the organs.

So manifestly is the action of the heart affected by Emotions, that in ancient times the heart was regarded, even by philosophers, as the actual seat of some of the passions. Plato placed the irascible faculty in the heart. Aristotle regarded it as the seat of the soul. These views, though now exploded, are embalmed in our language. The connexion of the heart with emotions and mental conditions is recognised in the expressions 'hearty,' 'cordial,' 'warm-hearted,' 'heart-rending,' and in a lover having 'lost his heart.'

Transient palpitations of the heart from slight causes is familiar to most of us. But mental worry and anxiety, if long continued, may cause the palpitation to be more persistent and distressing, as in a patient who consulted me for palpitation and sleeplessness, which had come on while watching and nursing her husband, who was dying of cancer of the throat. But the most serious cases—and they are not infrequent—are those in which a sudden emotion abruptly arrests the heart's action and causes immediate death. A well-known instance is that of John Hunter. He suddenly fell dead in a fit of passion.

Without pretending to explain the whole mechanism through which the effect is produced in such cases, we may well suppose that the pneumogastric nerves are the channels through which the emotion acts. We may infer this from the well-known experiment of arresting the heart's action by galvanising those nerves in animals. But in the vast majority of cases like John Hunter's, the emotion is not the sole cause of the death. In nearly all such cases there is a pre-existing disease of the heart; so that the death is really due to two co-operating causes—the old disease and the recent or more immediate emotion. John Hunter, who knew he had disease of the heart, was aware of the risk he ran from emotions, and had been known to declare that his life was in the power of any rascal who could put him into a passion. Cases like Hunter's are of very frequent occurrence—the emotions being different in different cases. A patient about to undergo a surgical operation has been known to die through fear of the operation.[1]

And here is another exceptional case. I took objection to the popular expression of 'dying of a broken heart.' But here is a case to which it might be applicable:

"*A Broken Heart.*—Dr. J. K. Mitchell, of the Jefferson College, Philadelphia, in lecturing to his pupils upon the diseases of the heart, narrated an anecdote in proof that the expression 'broken hearted' was not merely figurative. On one occasion, in the early period of his life, he accompanied, as a surgeon, a packet that sailed from Liverpool to one of the American ports. The captain frequently conversed with him respecting a lady who had promised to become his bride on his return from that voyage. Upon this subject he evinced great warmth of feeling, and showed Dr. Mitchell some costly jewels, ornaments, etc., which he intended to present as bridal presents. On reaching his destination he was abruptly informed that the lady had married some one else. Instantly the captain was observed to clasp his hand to his breast, and fall heavily to the ground. He was taken up and conveyed to his cabin on board the vessel. Dr. Mitchell was immediately summoned, but before he reached him the poor captain was dead. A *post mortem* examination revealed the cause of his unfortunate decease. His heart was found literally torn in twain! The tremendous propulsion of blood, consequent upon such a violent nervous shock, forced the powerful muscular tissues asunder, and life was at an end. The heart was broken."[1]

---

[1] *Medical Times and Gazette*, July 28, 1866, p. 93.

And here is another, still more exceptional, one in which the emotion was wholly different from any we have yet considered.

---

[1] From a Newspaper slip not named or dated.

Reydellet, the author of the article "Rire" in the *Dict. des Sciences Med.*, relates a case which had fallen under his own observation, of an aged nun, who was seized at table with laughter so violent that in some few minutes she fell dead. Those who were with her believed at first that her fall was in joke. Reydellet explains the case by supposing the muscles to have been so fatigued as to render them incapable of the act of inspiration, so that death ensued from asphyxia.

This explanation seems to me inadmissible. The muscles fatigued by laughter are the muscles of expiration, not those of inspiration. To me it seems more likely that there was prior disease of the heart, and that the fit of laughter was not the sole cause, but only the occasioning cause of the sudden death.

I give one more, because so intensely sensational, and because if the death were, as is probable, through arrest of the heart's action, it was probably an arrest of a previously healthy heart.

"In Magdeburg last week the chief sexton of the municipal cemetery was guilty of an act so atrocious that but for the intervention of the police he would have been lynched on the spot by the indignant populace. On the previous day a little girl, only seven years old, had wandered into the burying-ground under his charge, and plucked a flower from one of the graves, all unconscious of offence. The sexton caught her in the act, and determined to inflict a punishment upon her which should effectually deter her from 'despoiling the graves' for the future. So he dragged the terror-stricken child away to the dead-house, in which four corpses were lying on their biers awaiting burial, thrust her in, locked the door upon her, and went about his business. It was already late in the day, and the sexton, according to his own account, having finished his work, and forgotten all about his tiny prisoner incarcerated in the charnel-house, made fast the cemetery gates for the night. Next morning, returning to his work at the usual hour, it suddenly occurred to him that he had omitted to let the child out of the dead-house before going home, and he hastened to unclose the door, when a shocking spectacle met his gaze. Crouched up in a corner with glassy eyes fixed in a death-stare of horror, and blood-stained lips, bitten through and through in convulsive agony, was a fifth corpse—that of his unfortunate victim. The hapless child had been literally frightened to death. We shall be curious to see what punishment will be allotted by German judges to the relentless sexton of Magdeburg, whose hard heart not even the pitiful appeals of terrified childhood could melt to mercy."[1]

The blush of shame, and the flushing of the face in anger, are physiological examples of the influence of emotions over the vasomotor nerves. But Emotions may go further than in causing congestions. They may cause hæmorrhages. Of these I have given some examples in cerebral hæmorrhage. More rarely the hæmorrhage may be produced from other organs.[2]

"Many years ago Surgeon Corr consulted Dr. Stokes and me respecting a dangerous spitting of blood in a relation of his own. It appears that, nine years before, this young man had been seized with hœmoptysis, in consequence of the operation of some of the usual causes of this affection. The day of his attack happened to be his birthday, and *each successive birthday for the nine following years was disastrously marked by the recurrence of the spitting of blood!*

---

[1] Newspaper slip not named or dated.

[2] On Renal and Urinary Affections, Pt. III, p. 1286, by W. H. Dickinson, M.D., F.R.C.P.

After recovering from each attack he remained free until his following birthday. The tenth was followed by rapid consumption."[1]

Even more remarkable are the rare cases in which a general dropsy is reported to have been brought on by mental emotion.

Dr. Bateman[2] mentions such a case of a poor woman. She was afflicted with sudden universal anasarca, in one night, consequent on shock by the loss of a small sum of money—in fact, all she possessed.

The following case is related by Sir H. Marsh in illustration of Atonic Dropsy.[3]

"A young and beautiful woman, in the middle rank of life, highly but self-educated, of great mental endowment, of admirable taste, and strong sensibility and attachment, was, unconsciously, the one by whose hand a poisonous dose was administered to her sole surviving parent, to whom she was attached with all the fervour of devotedness of a daughter's love. The phial contained an ounce-and-a-half of laudanum: it was given in mistake for a senna draught. When presented to him by his daughter, he tasted it, and said he did not like it, and would not take it. He had not been in good health. It was with much entreaty that he was ever prevailed upon to take the medicine prescribed. She urged him, in terms the most affectionate and persuasive, to take his draught. He replied, 'Dearest, you know I never can refuse you anything,' and swallowed it. Three hours passed away before she was aware of her terrible mistake. She was aroused to it by the perception of the state of stupor into which her father had fallen, when it flashed across her mind. She found the senna draught, which she had intended to have given, untouched; she also found the word *poison* printed in large letters on the empty phial. The shock to her mind was terrific; she became like one insane.

---

[1] Dr. Graves in *Dublin Quarterly Journal*, Nov. 1, 1852, p. 263.

[2] T. Bateman, *A Practical Synopsis of Cutaneous Diseases*, 1829, p. 214.

[3] *Dublin Quarterly Journal*, Vol. 44, 1853, p. 9.

"All possible means were employed to save the life of the poisoned man, but they were employed too late. He died profoundly comatose at the end of a few hours.

"From the moment of his last expiration a change came over her; she was lost to all knowledge or notice of persons and occurrences around; she lay like a statue, pale and motionless; food she never took, except when it was placed upon her tongue. The only sound which escaped her lips was a faint ‘yes’ or ‘no.’ When asked what ailed her, she would place her hand upon her heart. Her extremities were cold; she sighed and shivered frequently, and dozed brokenly and protractedly. To her the world and all things in it were a blank. Tonics and stimulants were administered; air and scene were changed; kind and compassionate relations and friends tried, and tried in vain, to rouse and to console; she pined away, and nought but a breathing skeleton remained. She lingered on, with very little variety or alteration of symptoms, for ten months. Before her dissolution she became œdematous. The swelling, soft and transparent, was first perceived in the lower extremities; it gradually progressed upwards; it became apparent on the backs of the hands, along the arms, and ultimately it was universal.

“All the viscera, spinal, cerebral, thoracic and abdominal, were patiently and minutely examined; no trace of organic change of structure could be detected. There was a copious effusion of thin transparent serum into every cavity; into every serous tissue. The pericardium was separated from the heart by an abundant effusion. The large amount of the dropsical effusion contrasted strangely with the extreme attenuation. In this case, to repress the increasing dropsy, acupuncture had been several times practised, always with relieving effect; even with this deduction, the viscera appeared, as it were, bathed in water.

"This poor patient, beaten down in mind and body, breathed her last without a moan or a painful struggle."

The rationale of these cases is obscure. The most likely seems an action of emotion through the vaso-motor nerves. That dropsy may be caused by abnormal nervous action is proved by cases in which unilateral anasarca has occurred in association with hemiplegia. Sir H. Marsh has given the following case in illustration of Atonic Dropsy:

"The patient had not long before been discharged as convalescent from a fever hospital. His appearance was that of extreme wretchedness and destitution; he was paralysed on the right side; the whole of the right side was one pellucid mass of dropsical effusion, pitting on the slightest touch. Along the left side there was not a trace of effusion, not even at the ankle or instep. When undressed he presented as strange an appearance as ever met my eye."[1]

---

[1] *Dublin Quarterly Journal*, August, 1853, Vol. 44, p. 7.

The secretions of glands may be affected by mental conditions. We cannot be surprised at this when we remember how the lacrymal gland is affected by grief, or sympathy, or even, in some cases, by joy.[1]

Whether the influence of emotions on secretions be exercised through the vaso-motor nerves, or through direct action of nerves on the secreting cells, is a physiological question which I shall not discuss. An exact knowledge on this point would probably add nothing to our means of cure or prevention.

Less rare than those of Jaundice are cases in which Diabetes appears to be a result of mental causes. At this we need not be surprised, when we remember how mechanical irritation of the floor of the fourth ventricle will cause the urine of an animal to become saccharine.

The general nutrition may be impaired by mental worry. Under anxiety and worry some persons become appreciably thinner; and a good example is that of a hen with her maternal troubles of a large brood of young chickens. In many cases I have seen reasons for believing that cancer has had its origin in prolonged anxiety. On the skin, in causing eruptions, the effect of emotions may be very striking.[1]

---

[1] Jaundice from Mental Emotion. Case under Dr. Wilks at Guy's Hospital, *British Medical Journal*, July 2, 1870, p. 4. Churton's case of Jaundice from Anxiety, *British Medical Journal*, Nov. 19, 1870, p. 547.

Well now, what practical lessons may be learnt from all these examples of the influence of emotion in the production of diseases? What may we learn besides its varied and in some cases disastrous effects?

Well, the trials and misfortunes which give rise to the emotions, are incidents in social conditions beyond our control. We may do something to lessen their effect by advising that any bad or exciting news should be communicated gradually, gently and guardedly, and that young or weakly persons should not be exposed to the strain of long-continued anxiety.

The treatment of each individual case must depend on the nature of the lesion. But can we do any more than I have indicated in the way of prevention? Well, I think we can.

When we consider how common and numerous are mental trials, and in how comparatively few cases they are followed by such strange and striking bodily disorders as I have pointed out, we may reasonably infer that in the majority, if not in all such cases there was another element in the causation—that the immediately exciting cause was not the sole cause—that there was a predisposing cause as well as an exciting cause, and that this predisposing cause was, in the vast majority of cases, a condition or constitution of the nervous system rendering it more prone to suffer from mental shock, less capable of bearing mental trials, more violently agitated by them—in short, one form of what is called "the nervous temperament."

---

[1] T. Bateman, *A Practical Synopsis of Cutaneous Diseases*, 1829, p. 214.

The influence of a nervous temperament is plainly indicated in the familiar fact that women are more liable than men to Hysteria, though men are commonly more exposed to mental trials. It is shown in the fact that girls are three times more liable than boys to Chorea, and that in both, the age of liability is the most emotional age,—93 per cent. between the ages of five and twenty years.

Therefore we learn the vast importance of correcting or preventing this condition of the nervous system—of correcting it when it has come on as a sequel of any lowering disease—of preventing it, when inherited, by doing all that can be done in early life, by education, discipline and regimen. And this may have to be done not in early life only. We may have adult patients in whom it may be of the highest moment to strengthen and steady the nervous system, and render it less liable to be thrown out of equilibrium. And the knowledge of a special liability to nervous disturbance in any of our patients must teach us the necessity of extraordinary care and consideration in their treatment under any circumstances in which their feelings are likely to be severely tried.

Nervous persons should be habitually sparing in the use of tea and coffee, or abstain altogether from them. If they be of adult age, they need not be total abstainers from alcoholic drinks, nor need men abstain wholly from tobacco. Though habitual excess—even small excess, if habitual—would be extremely injurious, yet a moderate use of them might even be advantageous.

In the many examples I have given of the influence of the mind in producing bodily disorder or illness, the Emotions were the exciting cause. These are, as I told you, incomparably more potent as causes of bodily disease than any other states of the mind are. But in that case you may remember of the man keeping his bed for years under the superstitious belief that he was under the influence of an "evil eye," there was something in the cause besides emotion. He *imagined* that he was under the influence of an "evil eye." Imagination was in his case the primary and perhaps the chief cause of his strange condition.

Imagination is indeed a not unfrequent cause of bodily disorder. But let us be clear on this point. You may sometimes hear persons—even medical men—speak of a case of illness as imaginary, using the word in the sense of unreal. Now this is a mistake. The illness is real enough, though it may have had its origin in Imagination. In a large proportion of such cases it is mere nonsense to suppose that the illness is not real. It may not be what the patient supposes, but it must be illness. If a patient be willing to pay fees to medical men, and swallow nauseous medicines again and again, day after day, for weeks or months, in the hope of obtaining relief from his complaints, there must be something the matter with him. It may not be organic disease—the disorder may be only functional, but it must be a disorder; and if it be not a disorder of the body, it must be one of the mind.

But though the illness be not imaginary—in the sense of being unreal—it may have had its origin and chief cause in the Imagination.

There is the remarkable case[1] of a clergyman, about 40 years of age, rather a weak man, who happened to be drinking wine in jocular company, and by accident swallowed part of the seal of a letter, which he had just then received; one of his companions, seeing him alarmed, cried out in humour, "It will seal your bowels up." He became melancholy from that instant, and in a day or two refused to swallow any kind of nourishment. On being pressed to give a reason for this refusal, he answered, he knew nothing would pass through him. A cathartic was given which produced a great many evacuations, but he still persisted that nothing passed through him; and though he was frightened into taking a little broth once or twice by threats, yet he soon ceased to swallow anything, and died in consequence.

And here are two cases of Dysphagia:

(1) A farmer's wife, aged 37 years, consulted me on September 8th, 1856. She had five children; the eldest was 16 years old, the fourth 12 years; the youngest was born in the end of the preceding May. In the interval between the 4th and 5th births she had two miscarriages, and had also an illness with bad cough and expectora-

---

[1] Darwin's *Zoonomia*, Vol. II. p. 357.

tion (in the winter of 1851—52), of which she was cured by Cod Liver Oil. She said she was of a weakly constitution and nervous temperament. From Christmas until the birth of her child in May she was confined to the house, and generally to the sofa, because she said the gravid uterus pressing on a nerve caused such pain in the upright position as to render her incapable of walking. At the birth she had a bad flooding, which weakened her still more, and then she suckled her infant. The child was a fine one, and was not weaned until a fortnight before I saw the mother. Ten weeks before I saw her, while eating, she thought a crumb had stuck in her throat, and from that time she had a real or fancied difficulty in swallowing. She referred it to the upper laryngeal region. Nothing abnormal could be felt in that spot, but a little lower (viz. opposite the cricoid), on the left side, a small hard cervical gland—as large as a marble—could be felt close to the trachea. Nothing wrong could be seen in her. She had been under regular treatment, but without benefit. When I first saw her, her tongue was glazed and cracked, and her pulse was 120. She was living almost wholly on liquids (eggs, milk, etc.), but the dysphagia was capricious, for she could now and then swallow solids. She was speedily relieved of her trouble by fresh air and exercise, cold sponging, and Fer. et Quin. Cit. gr. v. ter quotidie, for on the 13th September her appetite had improved, and she was generally free from the dysphagia. Her catamenia had returned for the first time since the birth of her child. A year later, when I met her, she said she was quite well, and she looked so.

(2) A married lady, aged 32 years, complained to me, on October 16th, 1867, of a choking which came on after she had eaten a few mouthfuls, and of an uneasiness about the region of her larynx at other times. There was nothing abnormal to be seen in the pharynx, or felt about the larynx. Her catamenia were too profuse, and she had leucorrhœa in the intervals. She improved under treatment, but was troubled for some months with urticaria. In the following March she was cured of this last trouble. She was, however, then again complaining of the choking. It was very troublesome. She could indeed eat her breakfast pretty well, but at dinner she could not get beyond a very few mouthfuls, when the choking came and stopped her. She was weak, and had much leucorrhœa. The choking continued for some time, but was eventually cured.

There are cases in which hydrophobia has been imagined, There is one recorded by Chomel, and cited by Romberg.[1] A physician at Lyons having assisted in the dissection of several hydrophobic patients, was seized with the conviction that he had been inoculated with the virus. He lost his appetite, and became sleepless. When he attempted to drink he was seized with choking and spasm of the pharynx. For three days he wandered about the streets in a state of despair, till at last his friends succeeded in convincing him that his malady had its foundation in his mind.

Then there is the case recorded by Demangeon, in the Memoirs of the R. S. of Sciences of Montpellier, and cited by Tuke.

Two brothers were bitten by a mad dog. One went to Holland, and did not return home for ten years. Learning on his arrival that his brother had died of hydrophobia, he was seized with hydrophobic symptoms and died.

I have met with two cases of Spurious or Imaginary Hydrophobia. The one case was a man of about 45 years of age, who had been bitten in the right leg by a dog some ten weeks previously. The bite was made through trousers and stockings, just breaking the skin above the calf. The dog was subsequently killed, though not known to be rabid,—it had shown no symptoms of rabies. From the first the patient was nervous, had creepy or chilly sensations running over him, stiffness of neck, and some rigidity of the jaws. The day I saw him he complained that he had some difficulty of swallowing, but he had not the restless look of rabies. The leg had done very well at first, but had recently become excessively inflamed, like very severe eczema, extending from the ankle to the ham, and with some tenderness over the shin and some brawny feeling at one part of the calf, but no fluctuation. He had also some eczematous small spots on the front of his chest, and some of them were in rings. Under medicinal treatment and rest in bed he gradually recovered.

---

[1] Romberg, Vol. I, p. 182.

The other case was that of a man about 30 years of age, constitutionally excitable, but not naturally timid. He had been bitten in the thumb of his left hand by a puppy five months old, ten days before I saw him. The dog was and remained perfectly well. In general he was a large eater, but four days after the bite his appetite began to be very poor. He began also to complain of uneasy "nervous" sensations in his left hand and arm. These morbid sensations—"pins and needles"—increased, and had occurred in a less degree in his right arm also. His spirits had become depressed, and his nights mostly sleepless. These symptoms had not been absolutely constant, but no day had he been wholly free from them, and, notwithstanding, he had not given over attending to his business. He had even enjoyed rides on horseback. Once he had had a shudder. Under advice, he had taken two active aperient pills; after they had purged him strongly he felt better for some hours, but the morbid feelings had returned. Two days later I saw him. He was then somewhat agitated, and in the beginning of our interview the muscles of the right side of his face were twitching with emotion. But the excitement subsided as I reassured him, and he was quite composed when I left him.

I prescribed a tonic medicine, advised him to continue his usual occupations, and to maintain his temperate habits as to drink. He recovered completely and speedily. My positive assurance that his malady was not hydrophobia was, I believe, the chief remedy.

We have accounts of imaginary belief that the bite of the Tarantula would produce the involuntary dancing.[1] In many cases even the *bite* was imaginary. Of course, *emotion* aided; so that the cause was a *combination of Imagination with Emotion.* And in the later cases there would be an *expectation* of the effects in the minds of those who received, or thought they had received, a bite of the Tarantula.

Imagination thus associated with expectation, or still more strikingly in association with Imitation, may be a potent cause of bodily disorder. They act by giving undue predominance to some idea; and their influence is much augmented when associated, as they are in most cases, with more or less emotion. In these cases the effects are from the combined influence of the predominant idea and the accompanying emotion.

Here are some examples of the influence of Imitation:

(1) Two children, brother and sister, were brought to me from the country. Both were affected with loss of speech and impaired power of walking. The girl, aged seven years, had become thus affected six weeks after the boy, who was aged five-and-a-half years.

---

[1] Tarantism: Hecker's *Epidemics of the Middle Ages*, pp. 110, 112, 116. Sydenham Society, 1844.

(2) The late Dr. Stokes recorded a remarkable instance of the spread of hysteria in a hospital fever ward.[1]

(3) In the Edinburgh *Medical and Surgical Journal,* Vol. III., is the following account by "The Inquirer" of Epidemics of hysterical fits spreading by imitation in the Shetland Islands about 1770: "At first this distemper obtained in a private way with one female, but she being seized at Church the disease was communicated to others." Similar outbreaks subsequently occurred, chiefly at Church and other gatherings. "The cure is attributed to a rough fellow of a Kirk-officer, who tossed a woman in that state, with whom he had been frequently troubled, into a ditch of water. She was never known to have the disease afterwards, and others dreaded the like treatment."

In another parish. "It most commonly attacks them when the Church is crowded. . . . . On a sacramental occasion 50 or 60 are sometimes carried out of the Church (uttering wild cries and shrieks) and laid in the church-yard, where they struggle and roar with all their strength for five or ten minutes."

---

[1] *Lectures on Fever,* by W. Stokes, M.D., F.R.S., 1874, p. 307.

(4) In the same volume, and by the same writer, is an account of muscular involuntary contractions caused by Emotion and spreading through Imitation. There was a blaze of enthusiastic religion in Tennessee and Kentucky about 1800. There were great gatherings where the worship was incessant, with alternate crying, laughing, singing, shouting and gesticulating. "It was in 1803, under these circumstances, that some found themselves unable to suppress the contraction of their muscles." This disorder spread with rapidity, and it was "not uncommon for an affected person to communicate it to the greater part of a crowd, who, from curiosity or other motives, had collected round him." The disorder attacked both sexes, but chiefly enthusiasts in religion and females. The great majority were aged from fifteen to twenty-five years; but children of six years and adults of sixty years were affected. The muscles chiefly affected were those of the neck and trunk, sometimes of the arms. The movements were sudden and violent; convulsions occurred; and the patient was sometimes thrown to the ground. They were apt to recur on the slightest causes, even from conversation or the shaking of hands.[1]

---

[1] In the Edinburgh *Medical and Surgical Journal*, Vol. LII. p. 87, is

In all these examples the sight or idea of the malady, and the attendant emotion had the effect of exciting the like malady in the observer. The disorders were manifested in the muscular system—that system which is most apt to be disturbed through disorders of the nervous system.

But the influence of Imitation with Emotion is not confined to exciting convulsions or inhibiting voluntary actions. The late Dr. Stokes tells us of his observations of the first sight of Cholera patients giving rise to choleraic symptoms in others.[1]

You will have noticed in nearly all these striking illustrations of the influence of mental conditions in causing bodily disorders on so large and epidemic a scale, that they occurred long ago. They occurred in times when knowledge was less widely diffused than it is in our times; when religious enthusiasm was more liable to be mingled with superstitious beliefs; when, as in the case of the (German) Dancing Mania, large masses of people had been rendered unduly emotional

---

a "History of a singular convulsive disease, affecting five children in one family," by Andrew Dewar, Dumfermline; and in Hecker's *Epidemics of the Middle Ages*, cases of Sympathy are given at pp. 140, 141.

[1] *Lectures on Fever*, by W. Stokes, M.D., F.R.S., 1874, pp. 6, 7.

by the horrors and miseries of wars, pestilence and famine. Thus we may account for the wide spread of such disorders when once started. There were existing conditions favouring their spread. There were but few and feeble to check it.

So it is that these records of past times furnish facts that are not only curious and interesting, but also instructive—instructive because they go beyond what we are likely to meet with in our experience in the present day.

In all such cases we can see that emotion must have been an associated or attendant cause. But the more remote or primary cause—that in which the emotion had its origin—was various in the different cases. There was commonly some predominant idea which gave origin to the emotion and spread with it in epidemic form; but that predominant idea may have sprung out of mere imagination or superstitious belief, and may have spread mainly through imitation.

Strange as the facts appear, they cease to be wonderful when we remember the prevalent notions of those times. Less than two hundred years ago women were tried and executed for witchcraft within less than forty miles of Cambridge. Martin Luther was a sturdy seeker after truth, yet he maintained that all diseases had a spiritual origin, and was angry with physicians who attributed them to physical causes; and you may remember his throwing his inkstand at the devil when Old Nick appeared to him in his study.

We have thus seen how mental states may be actual, or, at the least, co-operative causes of bodily disease; and this is precious knowledge, not merely in a scientific point of view, but for the help it may give us practically in that which is the noblest of a Physician's duties—the prevention of disease. It is much to cure existing disease; it is much more to prevent it. A thorough knowledge of the causes goes a long way towards a thorough knowledge of the means of prevention.

J. PALMER, PRINTER, ALEXANDRA STREET, CAMBRIDGE.

WELLCOME LIBRARY INSTITUTE